The Builder.

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The Church of St. Mary, Odiham, Hants.

THE history of the ancient market town of Odiham, Hampshire, yet remains to be written; but from its former importance it might naturally be expected that we should find at Odiham one of the more stately church fabrics of the county. This district, where there is a complete dearth of local building stone, where the surface flints are less in size and more sparsely distributed than in East Anglia, where there was no water of sufficient depth to serve for carriage, and where the old sparse population was purely agricultural amid forest clearings, is distinguished by the smallness of most of its village churches and the poverty of the material of which they are often composed; though this does not prevent the occasional occurrence of architectural gems such as the small Norman chancel arch of Winchfield, or the beauties and curious arrangement of the later woodwork. But Odiham is a striking exception to all this, and gives obvious proof of extensive church building in squared and well-sculptured stone at successive important architectural periods.

The parish of Odiham is still one of great extent, covering over 7,000 acres, and stretching about three miles in each direction from the little town in its centre, except towards Greywell on the west. It comprises, in addition to the town, the five tithings, or hamlets, of Hillside, North Warnborough, Murrell, Rye, and Stapely. Odiham must have been an important centre of Christianised Wessex—a fact that lends credit to the tradition that here stood a palace of the Wessex kings—for the original bounds of the great sparsely-populated parish were far larger, and the more distant parts were gradually formed into separate divisions as they dropped off from the parent stem. As late as 1650, the comprehensive Parliamentary survey showed that Rotherwick, more than four miles distant to the north-west—Weston Patrick, more than four miles distant to the south-west, as well as the yet more distant Liss—even then recognised the ecclesiastical supremacy of Odiham, though in a civil sense long independent.

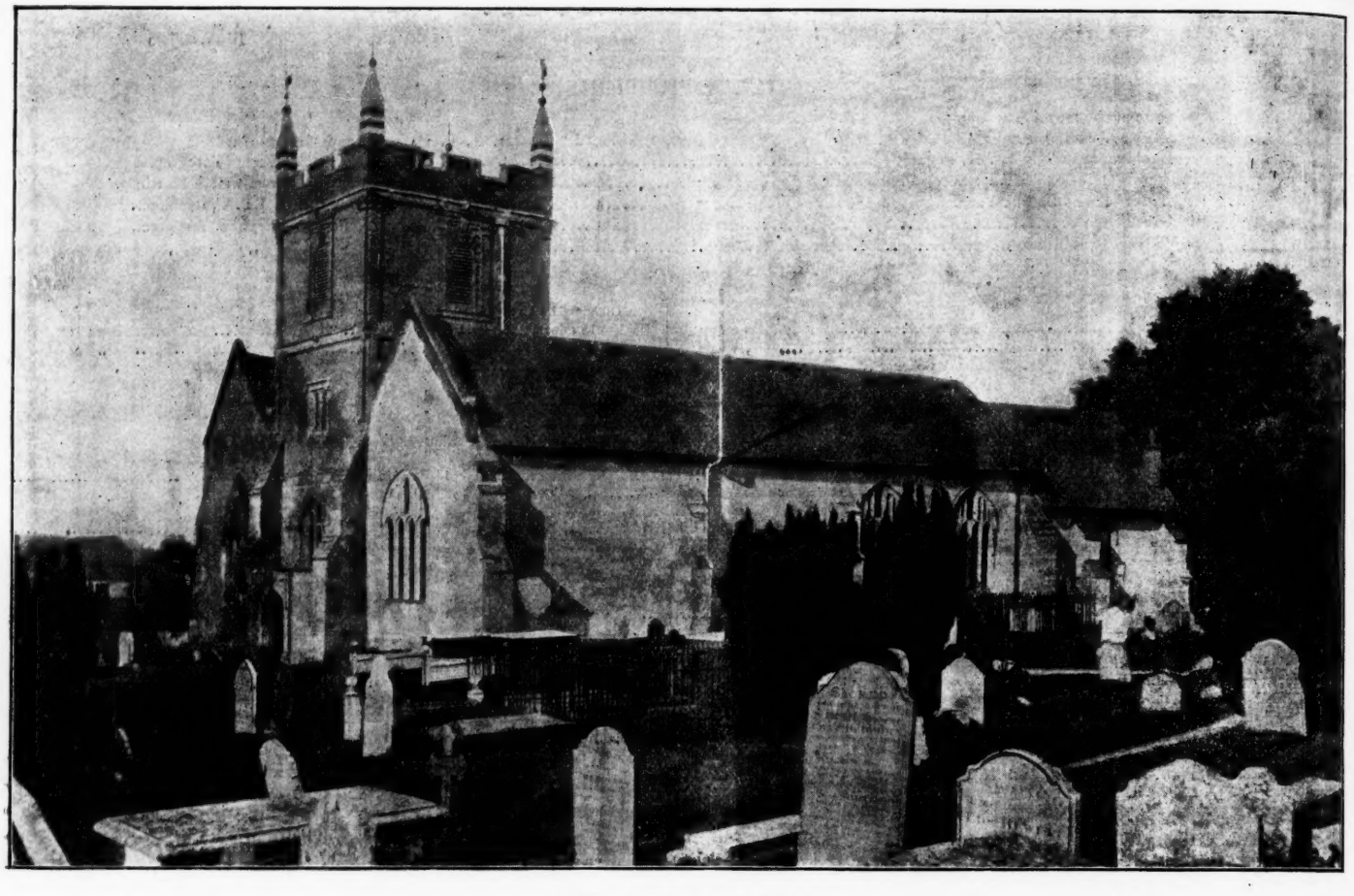
The earlier Norman kings had here a residential stronghold, and Odiham Castle was not infrequently occupied by the ubiquitous John, by whose name the remains of the castle are still usually known. At the time of the Domesday survey, Odiham had two churches; one of them was probably the small church of St. Mary at Greywell, about a mile and a half to the west, and the other, the church of All Saints in the centre of the the town, which must have been a kind of minster church to the surrounding district.

Henry II. gave the church and rectory of Odiham to the Canons of Salisbury as an endowment for their chancellor. The patronage of the vicarage remained with the Chancellor of Salisbury until 1857, when it was transferred to the Bishop of Winchester. The position of Chancellor of Salisbury, after its emoluments had been so materially increased by the royal gift of the rectory of the widespread parish of Odiham, became one of considerable importance, and was held by various persons of distinction. Baldwin, who became Bishop of Worcester in 1180, and Archbishop of Canterbury in 1184, was one of the earliest Chancellors of Salisbury who was also rector of Odiham. It was probably chiefly owing to the successive rectors of Odiham that the fabric of this large church was sustained. The taxation roll of 1291 gives the annual value of this rectory as 66*l.* 13s. 4d.; there were only four other benefices in the county of higher value. The resident vicar of Odiham only obtained 8*l.* a year. By degrees the rectory emoluments lessened as outlying districts became definite parishes, and the vicar's stipened increased, so that when the "Valor Ecclesiasticus" of 1535 was drawn up, it was found that the Chancellor of Salisbury only obtained 34*l.* from the rectories of Odiham, Rotherwick, and Weston Patrick, whilst the vicarage of Odiham was then worth 23*l.* 19s. 4d.

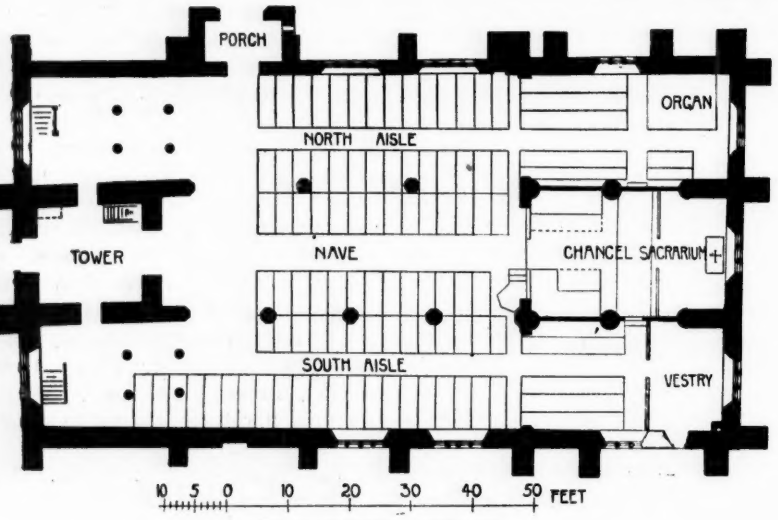
Ralph of York, who was Chancellor of Salisbury from 1288 to 1309, was impeded and ejected in the year 1303, by Philip Marmian, bailiff of Odiham, acting under Hugh le Despenser, keeper of the castle and manor of Odiham, from his rights of common pasture there, which formed an important part of the benefice. From that date until 1333 the rectors lost those privileges, but in the latter year Chancellor Richard de Ayremyn, a powerful man at Court, obtained legal redress. The jury, on inquisition, found that the parsons of the church of Odiham, from time out of mind up to 1303, had the right of common for pigs without number in all the fields, in all the arable demesne lands, both stubble and fallow, and in the wood of Whitemondsley and pasture of Holmhurst throughout the whole manor; and also the right of common in that wood and pasture for all manner of horses, mares, oxen, cows, heifers, young oxen, and calves, without measurement of pasture and without number.

The position of Rector of Odiham in conjunction with the Chancellorship of Salisbury was from time to time held by a series of more or less distinguished prelates, including three Archbishops of Canterbury, one Archbishop of York, two Bishops of Chichester, as well as Bishops of Worcester, Carlisle, and Ferns. Simon Sudbury, a favourite envoy of both Pope and King, was rector from 1360 to 1362, when he was consecrated Bishop of London; he was translated to Canterbury in 1375, retaining the primacy until his death through mob violence in 1381. Henry Chicheley and John Stafford, who, were successive Archbishops of Canterbury from 1414 to 1452, also began their respective careers by holding the benifice of Odiham.

The church stands back from the main street of Odiham, that flanks the two sides of the highway, on the rising ground to the south of the town. On its north side is a space called the Berry, or Bury, the undoubted centre of the town, where the stocks and whipping-post still remain. Various old footpaths from the distant parts of the parish converge on the west end of the churchyard. There is no part of the present up-



Odiham Church: Exterior.



Plan of Odiham Church.

standing fabric that pertains to the Norman period, but careful examination reveals a variety of moulded stones that tell of a church of that date. Portions of Norman jamb-shafts, &c., may be noticed worked up in the lower part of the buttress to the south side of the west door, and in various places amid the rough walling on the south side of the church. The capital of a small Norman shaft, found during the recent repairs, is now on the floor of the tower within the church. There is also an interesting Norman piscina shaft, with square drain in the capital, on the south side of the chancel; but it must have been moved here, as the walling round it is not Norman.

The present church of St. Mary consists of chancel with side chapels, nave without aisles, north porch, and west tower standing within the west bay of the nave. The ground plan forms a complete parallelogram, measuring 120 ft. by 64 ft., save for the slight projection of the shallow north porch. It is fairly obvious that the comparatively small Norman church was enlarged in the thirteenth century by the rebuilding of the chancel, with aisles or chapels on either side, and by the addition of a western tower. Of the latter, the lofty, narrow arch, with plain jambs and impost mouldings, that opens into the present tower from the nave, is all that remains. The low arcades of the pointed arches, supported on circular pillars and pilasters, on each side of the chancel, are also of Henry III. date.

To this period, too, belongs the remarkable font to which attention has often been directed. Round the circular bowl runs the inscription from the Vulgate, with the usual contractions—"Auxilium meum a Domino qui fecit celum et terram" (Ps. cxxi., 2). The lettering is in raised letters of a bold and slightly ornamental style of "black letter"; this kind of text is very exceptional for thirteenth-century work, and the suggestion that the lettering was done at a later date may possibly be correct. The character and method of this inscription is unique in English fonts, but its special peculiarity remains to be noticed. From the upper part of the bowl there is a bracket-like projection, in the top of which is an oblong hollow measuring 5 in. by $3\frac{1}{2}$ in. This hollow has sloping sides, and is $1\frac{1}{2}$ in. deep. At each end is a circular hole which is carried through the stonework at an acute angle, terminating in similar small holes lower down on the outer surface of the bracket. There have been various surmises as to the original use or intention of this bracket. Of late years it has been generally maintained that it was to serve for baptism by affusion. The usual old rubrics of the baptismal office of the Western Church ordained that when the infant was baptised by affusion the surplus water was not to be allowed to return into the font or compartment of the font wherein was the consecrated water, but that a vessel was to be provided to receive the water running off the head of the recipient. This is the explanation of the bequests of silver basins for the fonts that are occasionally met with in English mediæval wills. The general modern Roman use is to have the font divided into two parts for this purpose, each with its own drain running into the earth. In cases where this is not provided, it is usual for a server to hold a basin beneath the child's head. In several churches of Brittany and Normandy, as well as in the museums of Rouen and other towns in the north of France, are early fonts with side projections for this purpose. But in all these cases such projections have wide circular basins at the top and are continued down to the base of the font or floor level, being provided with a drain communicating with the soil or ground beneath. In the case of Odiham, however, the shallow,

Odiham Church : Interior.

small, oblong hollow is obviously quite unfitted for any such purpose, and if a little water is poured in, it trickles down the outside of the font in two directions after a fashion that would make its retention in any vessel placed on the ground an impossibility. It is just possible that the Odiham projection may have served to affix a movable bracket upon which a basin could rest; but this is improbable, for in that case the holes in the hollow would have been straight so as to readily permit of the fixing and unfixing of such a convenience. This may have been the use for the slighter projection, with straight holes and no depression, on the rim of the font of Pitsford, Northamptonshire. The curious circular projection or small stone basin protruding from the Norman font of Youlgrave, Derbyshire, has no drain, and doubtless served to hold a movable basin. The Odiham bracket could have had no connexion with the chrysmatory for the holy oils used at baptism, for the mediæval chrysmatory was of very small dimensions, and held in the hand of a server. On the whole by far the most likely use for this bracket was to serve as a support for the hinges of a font-cover of unusual solidity of structure.

The church was rebuilt on a large and extended scale in the second half of the fourteenth century. It is probable that Archbishop Sudbury was the benefactor who found the funds for this object. Simon Sudbury, a man of comparatively humble origin, when he attained to affluence, showed a generous disposition, and was particularly given to building operations. Not only did he leave the stamp of his name written large on the fabric of his cathedral church, and showed himself a considerable benefactor to the walls of Canterbury City, but he rebuilt the church of his native place of Sudbury, Suffolk. The plan that was adopted for the improvement and enlargement of Odiham church towards the end of the reign of Edward III. provided for the entire reconstruction of the nave, with new aisles and arcades, and for the enlargement of the choir chapel, though in the latter case the arcades of the previous century were retained. The plan also involved the extension of the nave by a bay to the west, and doubtless included the idea of a new tower of the more recent style to the west of the nave. But meanwhile the tower of the previous century was left standing, for the continuous service of the bells, &c., whilst the building went on to the north and south of it. Eventually it would seem that funds fell short, or some other obstacle intervened; at all events, the tower project was abandoned, and the church became a great parallelogram, with choir aisles flush with the choir at the east end, and a tower at the west end standing up within the nave, with aisle continuations on its north and south sides. The arcade that separates the north aisle from the nave is of lofty and exceptionally wide, round-headed arches, supported on exceptionally slender octagon pillars with plainly moulded capitals of fourteenth-century date. Similar wide, round-headed arches springing from like pilasters form the entrances from the nave into the choir chapels. The north arcade looks almost daring in its construction to bear the thrust of the wide, high-pitched roof of the nave; although, like all the Hampshire churches of this district (save the early one at Crondall), Odiham is destitute of clearstories.

The windows of the north aisle, and the three windows of the three east gables of the church, are all of fourteenth-century design, though the tracery has been for the most part renewed. Several of the buttresses, though mended at later dates with brick and in other fashions, were clearly originally of that date.

Font, Odiham Church.

Careful observation establishes the fact that the south arcade of the nave originally corresponded with that of the north. It is probable that the slender construction of the arcade, on the side of the church where the pressure would be greatest owing to the considerable slope of the ground, brought about its downfall or rendered it unstable. At all events it was renewed in good workmanship, with four-clustered columns, after the fashion of the latter half of the fifteenth century. The contrast that this arcade offers to the one on the north, though of like height, gives a certain piquancy to the interior of the church which would be lacking if they were both uniform. To the same period belong the windows of this aisle, though now filled with poor imitative tracery of nineteenth-century date. Later in the same style, *circa* 1500, a continuous rood-screen was evidently thrown

across the chancel arch and the two side arches; a projecting turret staircase for the rood-loft stairs being constructed on the north side. To this date belong the north doorway of the church, with its well-carved spandrels, the now blocked-up and somewhat plainer south doorway, a good deal of rebuilding of the lower stages of the west front of the tower, and well-turned doorway of brickwork into the north choir chapel.

The recent restoration of this church also brought to light the traces of another work of Tudor times. In the east wall of the chancel, immediately to the south of the high altar, a wide built-up doorway was found, and on the exterior, when the rough cast was removed, the exact dimensions of a late priests' vestry were disclosed against the wall; it was 12 ft. in width, and extended a little way under the east window of the south chapel.

It is not often that English church fabrics owe much, if anything, to the Commonwealth period; but in this district of Hampshire there was much wholesome energy during that epoch in good brick-work. A few miles to the west of Odiham is the well-known effective church brickwork of Basing, wrought in that period; whilst a few miles to the east is the substantial brick tower of Crondall church, of a like date. But the tower of Odiham, rising from work of a different date, and from between the two gables of the aisles, not only surpasses both of those just mentioned in happiness of position, but also in the delicacy and refinement of most unusual classic treatment. He would indeed be a Goth who would pull this down (as was once suggested) to give place to an imitative stone tower of sham Gothic. Excellent brickmaking clay is a natural product of the parish and district, and it is of much interest to find in this diversified building to what good purpose builders of those troublous days could use the material that was ready at hand. At the same time the gables on each side of the tower, which was built in 1647, were repaired and edged after a comely fashion in similar red brick.

The interior of the church is of somewhat impressive proportions, but the great semi-circular arches into the choir chapels, and the lack of capitals to the spring of the chancel arch, present a rather barren effect, and seem to demand the screenwork which was swept away either at the Reformation or at some later date. There are screens in the arcades between quire and quire chapels; that on the north side being mainly of rather poor fifteenth century work. Some also of the screenwork and beams used to divide off a vestry at the east end of the south chapel seem to be of pre-Reformation workmanship.

But this church possesses interesting and good examples in its woodwork of the Laudian revival of decency and comeliness in church fittings that took no small hold in Hampshire. In the western recessed bays of the nave, on each side of the tower, are remarkably good balustraded gallery fronts, and the work on the stair rail of each of the staircases against the west wall whereby they are gained is exceptionally effective. Both from their workmanship and the nature of the inscription they bear, these galleries are to be reckoned among the treasures of Odiham church. In the first instance, these now separated galleries seem to have formed part of one continuous west gallery which was set back, and a portion removed to give way to a new centre west gallery in 1836. Below the rearranged fronts of the now two west galleries is the following inscription in raised capital letters, the break of the tower occurring (quaintly enough) actually in the middle of the date 16—32:—"Rivers Smith gave forty shillings. John Kerye and Richard Flory, Churchwardens, 1632. Alex. Sandon Serle gave al the balusters not of wealth but of good will that others." . . . The sudden break in the inscription is the result of the 1836 destruction of part of the gallery. The pulpit is a particularly handsome example of rich carving of Charles I. time. It has a striking likeness to the equally good pulpit of the neighbouring church of Winchfield; the two are doubtless the work of the same craftsmen. The one at Winchfield bears the date 1634 on the upper ledge. Such pulpits are now well cared for and valued; but it is strange that the incongruity and clashing effect of that always ugly thing, the bright brass sermon-rest, with the accompaniment of bright brass gas or candle standards, are not realised. This beautiful pulpit would look far better with a small untasselled cushion of crimson material as a book rest. Beneath the tower, well within sight, hang the painted arms of Charles II., with "C.R.," and the Restoration date, 1660; they are arranged within the Garter, and below them is the exceptional and timely motto, "Beati Pacifici." This coat-of-arms has been recently cleaned and moved from an impossibly high position at the west end of the nave. Under the tower is another memento of the restoration of the Monarchy and Church Services. A large parish chest has the date 1662 somewhat roughly marked out in nail-heads driven through the lid, together with the initials of the churchwardens. But the general construction of the chest and the somewhat ornamental wrought-iron hinges (not the side clamps, which are later), show that this chest is much older than the nail-head date—possibly by quite two centuries. It had probably been abstracted from the church during the Commonwealth, and brought back in 1662.

A board in the south gallery states that the accommodation in the church was increased in 1836 by the erection of galleries, whereby 250 additional sittings were gained, 150 of which were free, in addition to 877 seats already provided, of which 250 were free. These galleries were a sad disfigurement, and ran right up the side walls of the aisles, though not reaching across to the arcades; and there was also a large west gallery provided immediately under the tower arch. In 1851 the church underwent considerable repairs, when the high pews in the body of the church were removed, and the whole seated much in accordance with some old plain oak seats, *circa* 1500, with panelled ends. Three of these old oak seats remain in the north aisle, but the new ones are of deal. In 1884 three stained glass windows were placed in the three east gables of the church, with the unfortunate result that the window of the chancel or central gable was considerably reduced in size, apparently to fit the design.

For a church of this size and former importance there is rather a dearth of monuments, and none of any architectural importance. There are a variety of brasses of small dimensions, all of which are now affixed to the walls. Two of them are to the north of the chancel arch facing the nave, and the rest in a dreary row against the north wall of the north chapel. The oldest dated brass has the effigy of William Goode, a priest who died in 1498, holding two very distant benefices, the vicarage of Ponteland, Northumberland, and the rectory of Dogmersfield, which is an adjacent parish to Odiham. The Hampshire Church Notes of the antiquary, William Pavey (now in the British Museum), who visited Odiham in 1702, show that several monuments have disappeared since that date.

In 1897 a restoration of this church was begun under the energetic control of the present Vicar, the Rev. W. J. Windle, Messrs. Colson, Farrow, and Nisbet being the architects. Certain improvements were first of all effected at the west front of the church, and particularly at the west entrance. The restored doorway is after the fashion of the north Tudor entrance, but its date is rightly expressly declared by "V.R." and "1897" in the spandrels. A wholly good part of this restoration was the clearing away of the disfiguring 1836 galleries, whereby the two parts of the 1632 gallery were brought into their rightful prominence.

The entire exterior of the church had been coated with rough-cast, which had got into a deplorable and fragmentary condition. All this has now been removed, and the walls left throughout in a substantial state of repair, without any attempt after uniformity of appearance. The result is the exposing of an extraordinary variety of patchwork material—large patches of undressed and dressed flints roughly embedded in mortar—and considerable repairs in brickwork are intermixed, not only with quoins and buttresses, and window-frames of stone ashlar, but with many blocks of chiselled or moulded stones that have formed part of the previous fabrics. The patchwork effect is particularly noticeable on the south side, where there is a considerable stretch of blank walling owing to the filling up of the south doorway and of the large window of the western bay of that aisle. Here, amongst other previously-used stones of different dates, and coming from at least four different and distant quarries, may be noticed one that must have formed part of the original south arcade of fourteenth-century date, when it harmonised with the arcade on the north. The whole exterior of the church is, indeed, a kind of kaleidescope puzzle of fragments that vary in form, age, and colouring. Such surfaces were not, of course, intended to have their anatomy exposed, and from certain standpoints it would assuredly have been better to have renewed the rough cast. Nevertheless, the treatment that the outer fabric has received will delight the artist, particularly after a little more weathering has passed over it, and will also afford unfailing interest to the ecclesiologist.

The red tiling of the triple-gabled roofs of the church and chancel is delightfully varied in tints and shadings, those of the chancel on the south side being much enriched with golden lichen.

There is no special dignity or touch of grandeur in the church of Odiham, nor can it lay claim to the possession of any striking or graceful architectural feature; but the artist and the lover of

"The time-worn churches of our native land"

cannot fail to take delight in a fabric so

redolent of the labours of past centuries, which are here blended in harmonious confusion. It would be difficult to find a more picturesque or beautiful view of any English church of no particular magnitude than that which can be gained from a south-west aspect of this church, from the further end of the churchyard, when the afternoon sun is lighting up the grey red-edged gables and flickering through the trees on the warm tints and shadows of the Classic brickwork of the tower.

The exterior photograph, taken before the removal of the rough-casting, hardly represents the present effect of the church.

NOTES.

The National Trust Meeting.

THE annual meeting of the National Trust was held on Friday the 10th in the lecture-room at the United Service Institution; a room architecturally very pleasing but, from its unbroken semi-circular wall opposite the platform, not very well adapted for speaking. The Princess Louise, who is the President of the Trust, occupied the chair. The resolutions to be moved were merely formal, but they afforded the opportunity for some effective speeches on the object and work of the Trust, especially those of Sir Robert Hunter and Lord Lytton. The latter speaker dwelt at some length on what we have often commented on—the absolutely antagonistic spirit with which any subject connected with artistic or æsthetic considerations is invariably received in Parliament. The attitude of modern statesmen, he said, towards questions of art and the encouragement of works of art, was painfully in contrast with that which prevailed in the cities of mediæval and Renaissance Italy. He cited a remarkable instance of this, when a private owner at Siena had commenced an exceedingly beautiful palace, which would have been an ornament to the city, but had not funds to complete it, and the municipality created a well-paid sinecure post and appointed him to it, so that, for the adornment of the city, he could complete what he had so well begun. One is very glad to hear some plain speaking on this subject, though there will have to be much more of it before any impression can be made on the average English Parliamentary mind. The meeting was a very successful one in regard to attendance, and no doubt will have had the effect of drawing public attention to the important work which the Trust is doing in preserving for the nation places of beauty and of historic interest. The contents of the Annual Report are summarised on another page.

Strand Improvement.

A COMMITTEE for bringing about what is defined as the "Further Strand Improvement" has forwarded a memorial to the Chairman of the London County Council recommending the adoption of a new line of frontage on the north side of the Strand, as shown in the small plan published in our issue of the 4th inst., along with a letter from Mr. Mark Judge, the hon. secretary of the Committee. The scheme is supported by the President of the Royal Academy, in a letter which is incorporated in the memorial. As now proposed we approve of the alteration, as it preserves the symmetrical laying out of the new streets, which the first proposal, from Mr. Thornycroft, neglected. We may observe however, that the proposal for an "island," planted or otherwise decoratively treated, between the churches of St. Mary-le-Strand and St. Clement Danes, was made many years ago in our columns, and in a much better form, in a plan and drawing by Mr. H. W. Brewer, at the time when the demolition of Holywell-street was first seriously entertained.

Workmen's Compensation.

A SERIOUS difficulty has arisen under the Workmen's Compensation Act by reason of the terms of Section 6. That section enables a workman who has been injured whilst working on the undertaking of his employer by the negligent act of some third party either "to proceed" against his employer for compensation under the Act, or to pursue his remedy for damages against such third person, but not to sue both. The difficulty is to determine what is meant by a "proceeding" under the Workmen's Compensation Act, so as to bar the workman taking his remedy against the third person. Compensation is very often tendered by employers when they receive the notice of accident, and before even the informal claim required by Section 2 has been made; will compensation so accepted debar a workman from proceeding at law against a stranger? Again, if compensation is paid at any stage short of an award, has he "proceeded" under the Act? The House of Lords in the case of Powell *v.* Main Colliery Co. laid it down that the scheme of the Act was to avoid technicalities, and that regular legal proceedings were not within its contemplation; but even from the judgments in that case, it is apparent that the Lords took a divergent view of whether the claims for compensation prescribed by Section 2, formed part of the "proceedings" for the recovery of compensation. The Court of Appeal last week had this question before it in the case of Oliver *v.* Nautilus Steam Shipping Co., where payments had been made by the insurers on behalf of the employers after the receipt of the notice of accident, but after the first payment the workman had only received the money "without prejudice," and the Court held that all the payments must be taken to have been received on this condition, and that hence the workman had not exercised any option under the section, and was consequently not stopped from proceeding at law against the third person. This decision, therefore, carries the matter no further, and the only points at present decided are that if the workman has obtained compensation under an award of an arbitrator he cannot also proceed against another person, and that giving the notice of accident required by Section 2 is not a "proceeding" under the Act.

Erections Causing Smoky Chimneys.

WE recently (April 4) commented on the case of Davis *v.* Town Properties Investment Corporation, in which the plaintiff endeavoured to restrain the assignee of the reversion of his lease from erecting a building so as to cause his chimneys to smoke, relying on a covenant for "quiet enjoyment" in his lease. The main ground of the decision against the plaintiff was that the lessor, at the time of the demise, had no interest in the adjoining property, and no power to restrain any rights of the owner over that property; but in the course of the case the Court of Appeal expressed considerable doubt as to whether, had the ownership of the properties been in the same hands, any such right to the air for the chimneys could be claimed by virtue of this covenant, and consequently a doubt whether the case of Tebb *v.* Cave had been rightly decided. We said we should revert to this latter point when the case of Davis was fully reported, and such a report appears in the "Law Reports" for June. After the doubts expressed by the Court of Appeal, and also the decision in the case of Booth *v.* Alcock, it is clear that no such right can be claimed by virtue of a general covenant in the absence of a special licence or grant. Nor does it appear that a general right to air can be acquired by prescription, and in this respect a distinction occurs between the right to air and the right to light. The reason for this distinction is clearly shown in the cases, in that the right to light is limited to particular windows or apertures, and its acquisition can thus be guarded against by adjoining owners, as it is capable of interruption; but a general claim to air is too vague, and this natural right is qualified by those of adjoining owners. The right to air seems limited to its freedom from contamination, or its necessary access to a particular place; but this latter right must be taken in a limited sense, since the right to air for turning a windmill was held to be too vague and incapable of interruption.

The Worcester Corporation.

IT makes one despair of sanitary improvement by small local bodies when one reads of the judicial censures of an important municipal body like the Corporation of Worcester. This body, through its several members, was this week brought before the King's Bench by the Local Government Board, and writs of attachment were issued against a number of members of the Corporation. The proceedings against the Corporation had begun in 1897, and in the opinion of the Court the Corporation had not taken genuine steps to have a new sewage system carried out. "The story," said Mr. Justice Wills, "was one of the most discreditable which had come to his ears since he had been on the Bench." It is impossible in a short space to go into all the facts. It is sufficient to say that so long ago as 1885 an Act was obtained by the Corporation to dispose of their sewage, and they were given three years in order to carry it into effect, but up to the present time the system was still not begun. It is certainly difficult to understand how the citizens of Worcester, if only for the credit of their town, can allow their representatives to bring their city into discredit, and expose its inhabitants to dangers of disease in a manner which we do not believe would be sanctioned by any other community. We can only hope that good sense will overcome what we suppose is some kind of feeling of antagonism to the pressure of the central Government.

Influence of the Aswan Dam.

WATER held up during the winter months in the Aswan reservoir has now been discharged, and one of the first consequences of the process has been that some of the

reconstituted hôds, or basins, in the provinces of Asyût and Miniyeh have this year received summer supplies for the first time. Further, it has been found possible to withdraw the restrictions as to the cultivation of rice which were necessary in former years of indifferent flood, with the result that a large area of rice land has this year received water-supplies. The favourable influence of the reservoir is also to be traced in modification of the system of "rotations" and in the unusually early removal of the prohibition against the irrigation of land used for growing maize. As maize is the most important food crop of Egypt, the last mentioned is not the least of the benefits derived from the construction of the Nile reservoir works.

The Wellington Monument.

A BRONZED facsimile of Stevens's model for the horse and rider, made for the Wellington monument, has during the past week been erected on the space left at the top of the monument as a pedestal for the equestrian statue. Some parts of the horse seem to have been left in a rather crude state of modelling, but one can judge of the general effect. As might have been expected, the group is quite different from the ordinary commonplace of the military equestrian statue; the attitude both of horse and rider is very characteristic and original; as with all the rest of the monument, there is a kind of stamp of the Italian Renaissance period about it. But we must own that this experiment seems to show that the position is not very suitable for an equestrian statue when the monument has to be seen within a building. The furthest position one can get from it, at the side of the south aisle, is not far enough to properly take in the group as a part of the whole composition, or to see it from the proper point of view. In the middle of an open square it would have been just the thing; and in the middle of the nave of the cathedral it would be far more effective; as it is, the arch comes too close down upon it. There would have been objections of another kind, however, to the central position in the nave; it would have been unsuitable as a matter of sentiment, as giving too prominent a position, in a sacred building, to a monument of distinctly secular type. We are not arguing that the group ought not to be placed on the monument; it was the finish intended by the artist, and the monument is palpably incomplete without it; but one cannot help feeling that the position, from the artistic point of view, is inadequate for the effect of the equestrian group, or of the work as a whole. We must make the best of it now.

The Sullivan Monument.

IT is a gratification that we begin now to find monuments erected in London which are not commonplace, and which display individuality and poetic feeling. Such is Mr. Goscombe John's monument to Arthur Sullivan in the Embankment Gardens, which was unveiled last week. The portrait bust of the composer, in gilt bronze, is carried on a high slightly pyramidal stele, in front of which a partially draped female figure, with her forehead against the stone, symbolises Grief. On the west side of the stele are engraved the lines from one of Sullivan's and Gilbert's joint operas—we forget which—

> "Is life a boon?
> If so, it must befall
> That death, whene'er he call,
> Must call too soon."

At the base of the stele, on the opposite side, is a knot of what the French call "attributes"—a mask of Comedy, a lyre, and an open score on the page of which is engraved the musical setting by Sullivan of the words above quoted: these are also in gilt bronze. All this is expressive, suitable, and in good taste. Perhaps we might have liked the bust and the figure better in bronze patina, without the gilding, which at present looks a little too staring; but it must be remembered, of course, how soon bronze gets dingy in the London atmosphere, and perhaps the gilding will be more proof against this.

The Onslow Ford Monument.

IN the monument to Mr. Onslow Ford, unveiled on Monday last at the junction of Grove End-road and Abbey-road, St. John's Wood, we have another monument which can be said to be of artistic merit. It consists of a pedestal, with an obelisk rising from it, designed by Mr. J. W. Simpson, architect. On the projecting portion of the pedestal in front of the obelisk is a replica in bronze of Onslow Ford's own figure of the Muse at the base of the Shelley Memorial at Oxford, and at the back of the obelisk is an excellent alto-relief bronze portrait head of the late sculptor, in a circular medallion decorated with palm leaves, and with a scroll beneath bearing the words from "Hamlet"—"To thine own self be true"; words equally appropriate to Ford's memory whether regarded as man or artist. This portion of the work is by Mr. A. C. Lucchesi. The only point in the design that we feel a little doubtful about is the bronze string-course with angle-caps which surrounds the obelisk near the top. The object was, perhaps, to insert a bit of bronze detail here as a kind of echo to the bronze work beneath; but we do not think it improves the effect. Otherwise, the architectural details are excellent, and the whole effect very satisfactory. The monument was subscribed for by numerous friends of the late artist.

Antiquities from Beni-Hasan.

A VERY interesting collection of Egyptian antiquities recently discovered at Beni-Hasan, by Mr. J. Garstang, is on view at the rooms of the Society of Antiquaries until the 25th inst. These are objects discovered in tombs, and relate mainly to the everyday life and habits of the Egyptians. There are a considerable number of rather rough models of boats, with the rowers and other inmates, which however hardly show anything beyond what one is familiar with from many representations of Egyptian boats. Among other objects is a light wooden-framed bedstead (very narrow), and two of those singularly uncomfortable-looking head-rests which served the function of pillows; these are of wood, but in another case is a superior one of alabaster with a fluted stem. Wooden sandals with wooden straps are among other articles to be seen; and a wooden model of a courtyard and granary, the men carrying the packages of grain from the courtyard up a ladder, to discharge the contents through openings in the top of the granary. A large coffin, not shaped at all to the lines of the body, but a long high box, simply but very effectively decorated, is one of the most important exhibits, and is in wonderfully good preservation. Among minor articles may be noticed some beautifully woven baskets, one large one quite perfect and of most finished and delicate workmanship; a round clay bowl with eight smaller bowls, of deeper and narrower section, worked on the edge of it (is this an ancient form of cruet-stand?), and a very elegant toilet-box for kohl, quatrefoil in plan, with a simple repeating ornament down the centre of each face. There is nothing of specially architectural interest except a photograph of the oldest arch known in the world; this however does not belong to the Beni-Hasan group of antiquities. About these latter there is a singularly human interest; they seem to bring us into relation with the everyday life of ancient Egypt.

L.C.C. School of Arts and Crafts.

THE exhibition of the work of the students of the London County Council Central School of Arts and Crafts, open this week at 316 Regent-street, shows the best work in the departments of modelling and book-binding. We understand that the book-binding class has been the most numerously attended of all, and certainly the bindings exhibited show both good workmanship and good design, though there is not much in the way of new or original idea in design. Among the examples of sculpture modelling we noticed a good study of a child from the life by A. Wilkins; G. D. Macdougald's architectural pediment with figures, and his frieze of children, are good; and Miss Dorothy Rope's panels of child subjects in very low relief (one of which, it we mistake not, is exhibited at the Royal Academy in silver), are the work of an artist. The architectural designs seem to run rather in the direction of the picturesque fancifulness of the present time—white houses with red-brick plinths, &c., and in one of the "designs for a country house" we observe that dining-room, drawing-room, and kitchen windows all face the same way; we hope this is not the way they are taught to plan. Among the tile designs are some good patterns, and among the numerous carved picture-frames one by H. W. Walker, and one by E. M. Willis, with a thistle pattern, may be noticed as superior to the rest. In one of the rooms a large angle cabinet with leaded glass panels in the doors shows very good design and workmanship. We may also notice the examples of lettering and illumination; there is nothing much in the illuminations, but the examples of lettering show that the style in this class of work has been framed on the best models.

The Fine Art Society.

AT the Fine Art Society's Gallery there is a miscellaneous exhibition of water-colours by various artists; some of them not very familiar to us. The exhibition is noteworthy as showing, when considered *en masse*, a great deal of good colour—in some instances perhaps one may say, colour and little else; but nevertheless there is a decided impression of harmonious colour left on the mind. Miss Frances Hodgkins, who exhibits the

first nine works in the catalogue—Moorish sketches chiefly, is admirable in colour, but the drawings have rather too much the appearance of being painted on blotting paper. Mr. North's "First Day of a Late Spring" (15) is a perfect example of his style — a style complete in itself, but it is not nature, it is his translation of nature. Miss Smythe is imitating her father's style rather too closely in "Winter Gleanings" (40), a picture flat and almost decorative in treatment, but very clever. Mr. Bagshawe's "A Grey Dawn" (12) and Mr. Coop's "Conway" (16) are studies of light effects, rather too woolly in texture. In "The Cypress Avenue" (28) Miss Mary Barton gives us the poetry of trees, while Mr. Hopkins's "In a Pinewood" (35) gives us the prose without the poetry. Miss Butler's "The Gateway" (43) is a lovely bit of colour; crimson flowers massed over the gateway, white lilies in the foreground. Mr. Alfred East's "Golden Autumn" (65) is one of his experiments; a fine bold study, but a little overstepping nature. The central and all-round school of water-colour is represented by two or three admirable landscapes by Mr. Eyre Walker; by Mrs. Allingham's "Bluebells" (59), and Mr. Newton Benett's beautiful and delicate drawing of "Lechlade" (67). Among others of note are a fine interior with a figure, by Mr. Walter West (57), in the style now familiar to us; Mr. Tom Brown's "Corner of Vollendam" (70) in which there is real humour in the study of three figures in the foreground; "The Potato Planter" by Mr. Grierson (24), a study of a single figure seen against sky; and Mr. R. Barratt's "View from St. Mark's, Venice" (26), an architectural subject. There is a great deal of varied interest in the collection.

THE ARCHITECTURAL ASSOCIATION SUMMER VISITS:

WONERSH, SURREY.

IN glorious weather, the third summer visit of the current session was made on Saturday last to the neighbourhood of Wonersh, in Surrey, a district rich in ancient and modern domestic work of a high order, attractive alike to the architect and to the lover of rural life. Chilworth Station was the rendezvous of the thirty members, whence a walk of about a mile brought them to the first place of inspection.

Great Tangley Manor represents all that is homely and all that is delightful in the tradition of the English house and garden. The history is the not unusual one of a mediæval moated manor-house falling into disrepair, used latterly as a farmhouse, rescued from destruction within the last two decades and repaired and adapted to the needs of modern living. The old parts of the exterior are half-timbered, dating from 1582, with doors, windows, partitions, &c., of oak, and chimneys in brick, all typical of this period of English work. Evidences exist, however, of the scale and magnificence of the place previous to that date, notably in the heavy open-roof trusses now seen in a first-floor bedroom, but which originally spanned a large banqueting hall; traces of a musician's gallery are there also. The height of this hall was intercepted by the chamber floor referred to, which was put in at the time of building the new fronts in 1582. Interesting timber-framed partitions occur in many places, but most of the ceilings are plastered in large plain surfaces, hiding the oak floor timbers, and this is doubtless a work of recent years to assist in deadening sounds, which are so easily conducted all over a house with open-framed floors and walls. Under the direction of Mr. Philip Webb, additions, comprising drawing-room and bedrooms over, were made at the north end in 1897, and at the south end in 1886, when the library was built and at the same time the covered way and bridge leading to the house from the main entrance; this work was carried out in a sympathetic manner, in which one observes the spirit of the ancient builders carefully retained. A somewhat more ambitious addition was made in 1902 on the south by Mr. George Jack, containing amongst smaller and minor apartments a large octagonal chamber now called the tapestry-room; modern in form and treatment, it shows, however, some "clever" features; the ceiling consists of two intersecting barrel vaults in plaster into which the splayed walls of the octagon are run; the lighting is successful, but the extension cannot be said to harmonise with the traditions of the house.

When the property came into the hands of the present owner, one of the first works undertaken was the development of the garden, in 1884, since when time has worked wonders in the growths now to be seen; for instance, yew hedges planted 1 ft. 6 in. high now measure 12 ft. One of the earliest operations was the excavating of the moat, and regulating the water-supply from the neighbouring stream. Here are rock gardens, a bog garden which can be flooded at will, orchards and lawns through which the members were conducted by the owner, Mr. Wickham Flower, and from whom it was understood that no plan was used in the lay-out. Considerable judgment and taste have, however, been bestowed on the work, for although straight paths, hedges, and other regular features are introduced, there is an absence of rigid formality and of the quaint shams often met with in modern garden craft. The natural conditions are seized upon, and form the basis of the scheme, and by sound direction order has grown out of chaos—an order resulting in a really true garden, as befits the surroundings of such an interesting house. The welding of house and garden was never more satisfactory, or achieved with so little effort.

Over the hill to Blackheath Common a delightful roadside church—St. Martin's—was next visited. The lines of the simple rectangular plan are only broken by a carved recess for the officiating clergyman on the north side and by a square recess on the south, originally intended to accommodate local musicians. No organ space was provided, as an effort was to be made to revive the old form of village church music, and the recess was made only deep enough to admit of the playing of a few instruments. The scheme, however, did not succeed, and a small independent organ has been introduced in the choir. Mr. Harrison Townsend, the architect, kindly met the visitors and made some general remarks on the fabric, which has an internal area of about 60 ft. by 25 ft. The walls are built of concrete, about 2 ft. 9 in. thick, rough casted externally, while the doors, windows, and other parts have Ham Hill stone dressings; a pantile roof of a very flat pitch covers the whole, and behind the east wall an old cottage is incorporated for use as a vestry. Internally, the walls are but 6 ft. high, from which springs a large plaster barrel vaulted ceiling relieved only by broad flat ribs and low intersecting arches, three on each side, each of which contains two small side windows. A horizontal rib placed at about the level of one-third of the rise produces with the string course at the springing a deep frieze within the lines of which are contained the intersecting arches referred to. An ambitious scheme of frescoes has been applied to this frieze, the work of Mrs. Lea Merritt, and stands out in greater evidence than other features of the broad interior. One is compelled to make criticism upon this colour decoration, for it is an instance of the unfortunate result of introducing an embellishment, the treatment of which is quite out of sympathy with the architecture and bears no relation whatever to the position either in design or colour; moreover, it is but fair to state that the architect is in no way responsible for it. A prominent feature is a large gilt screen which shows a Spanish influence in its design; there are other interesting fittings, but the spectator's attention is directed to the altar and its lighting. The screen marks the extent of the choir (the usual chancel arch being dispensed with), but at the east end a large semi-circular sanctuary arch is built about 5 ft. from the east wall; there are no side lights, but an indirect toplight is obtained from a small gable window at the apex of the main roof, the source of which is therefore hidden by the arch from view by the congregation, and a pleasing mystery has therefore been introduced with great effect. In many other repects this little fabric possesses much that is the outcome of considerable study.

In the same village was seen a small mission hall, in the design of which Mr. Seth-Smith has spared no pains in producing a little building which is at once a success both in its practical purpose and in complete harmony with its delightful surroundings.

Various cottages which Mr. Townsend has worked upon were inspected on the way home, but before arriving at the station the party halted at the Grey Friars' Monastery, at Chilworth. These buildings are entirely erected in stone with tiled roofs, and comprise a large chapel with nave and side chapels, choir and chantry; a cloister, chapter-house, library, and refectory all on the ground floor, while the first floor is mainly the sleeping apartments of the twenty Franciscan priests who now inhabit the institution. Poverty is one of the rules of the Order, and has been observed by the architect, Mr. F. A. Walters, in all detail, the bareness of which is everywhere seen in depressing contrast with the luxurious site upon which the buildings stand. We published a view with description and plan on August 1, 1891. The plan is of the usual quadrangular arrangement with broad external effects: that seen from the south-east is particularly dignified. The bell-turret, surmounted by a small spire, is a splendid piece of grouping, and forms a conspicuous landmark.

Time alone prevented an extension of the programme to St. John's Seminary, Wonersh, by the same architect, and although late in returning to town the members fully appreciated the variety and interest of the places visited during a brilliant summer afternoon.

THE HEALTH EXHIBITION, BRADFORD.

AMPLE space for the Health Exhibition in connexion with the Annual Congress of the Sanitary Institute is afforded by the permanent and temporary buildings and grounds of the Neville Barracks, Bradford. As usual, the exhibition is one of the most important features of the Congress, and it contains a comprehensive collection of exhibits representing various departments of science in relation to hygiene, the hygiene of special classes, trades, and professions, construction and sanitary apparatus, water supply and sewerage, heating, lighting, and ventilation, and domestic hygiene. Almost all the exhibits are more or less of interest to our readers in one way or another, but in the following notes we are only able to call attention to some of the more important materials and apparatus. As might be expected, manufacturers of fireclay goods are conspicuously to the front. One of the first stands encountered on entering the temporary building is that of Messrs. Shanks & Co., of Glasgow, who have a good selection of baths, lavatories, sinks, and closets, with suitable fittings. Messrs. Twyfords, of Hanley, also show an excellent collection of their well-known specialties; Messrs. Cliff & Sons, of Wortley, exhibit glazed bricks of different colours—Tiltman's patent partition bricks, Hall's hanging tiles, Shepherd's partition, as well as numerous examples of hospital sinks, baths, lavatories, and similar appliances. In addition, their stand includes some very interesting objects, such as the Hessell-Tiltman scum channel, the "Corporation" disinfecting channel, and the "Fios" self-recording test recorder. The latter instrument, invented by Mr. F. J. Osborne Smith, is intended for automatically recording the movement of water surface in manholes, drains, sanitary appliances, cisterns, and wells, and also for indicating the varying pressures of gases, the discharge of flush tanks, and the time occupied in various stages of bacterial sewage purification. We may also direct attention to the well-arranged porcelain mortuary slab, on pedestals of similar material, exhibited by this firm. Among other fireclay goods shown by Messrs. Oates & Green, of Halifax, special mention may be made of a range of white enamelled lavatory basins, with lugs for building into a wall and complete with wall brackets, and a range of white enamelled "Isolt" latrines, with automatic flush and separate trap made in one piece with the pedestal, this set being specially designed for institution work where absolute

isolation is desired. Fireclay goods are also represented by Messrs. J. Duckett & Son, of Burnley, who exhibit miscellaneous fittings, and some well-arranged sets of isolated siphonic closets; and by Messrs. Doulton & Co., of Lambeth, whose extensive stand includes some thirty exhibits, such as wash-tubs, baths, operating and ordinary lavatories, closets, urinals, and an excellent mortuary table, with ball-bearing pedestal and screw-brake arrangement, enabling the operator to fix the table in any required position.

Turning now to exhibits devoted to plumbing in connexion with fittings of the kind already described, we find in the stand of Messrs. Claughton Bros., of Leeds, some admirable examples of sanitary lead work, and in that of the Valveless Siphon Co., of Leeds, various closet suites, watertight cisterns, closet suitors, ball valves, and kindred apparatus. Sanitary engineering is further represented by a number of firms devoting attention to pipes, traps, gullies, and miscellaneous fittings. The Neville Engineering Co., of Worcester, exhibit Caink's patent jets and sprinklers for street watering-carts, and Caink's sewer ventilators, in which gas is filtered and allowed to escape gently. A sectional model of this apparatus serves to make clear its method of action. The Ames Crosta Sanitary Engineering Co., of Nottingham, show patent self-adjusting pipe joints, permitting true alignment, and ensuring sound gas and watertight joints, and surface water-gullies perfectly trapped under all conditions. Stoneware conduits for electric cables, and drain-boxes for tramway rails, are also a feature on this stand. The Bradley Star Tap Co., of Sheffield, have several patterns of their ingenious ball-taps, the mechanical action of which is briefly as follows:—The tap has a full-way water passage for all pressures; therefore, when one is used to supply a cistern, the inflowing water rapidly raises the float-lever, thereby closing the valve against the upward pressure of water within the tap, and which resists the closing movement owing to the area of the cup-leather end of the valve being greater than the area of the outlet. This action continues until a point of equilibrium is reached, which is maintained until the volume of water passing into the cistern causes the float lever to turn the balance, when the valve instantly completes the act of closing without injurious concussion. A reversal of these operations opens the valve when water has been drawn off from the cistern. A cup leatherless ball-tap for varying pressures, or for hard waters, is another useful invention exhibited by this firm.

We noticed several types of apparatus for testing drains and for removing obstructions from pipes. Mr. Richard Ravenor, of Newbury, has a machine for testing drains and soil-pipes by smoke and air pressure, the special features of this invention being that smoke rockets can be used effectively in drains of considerable length without danger of explosion from unconsumed gases emitted from the previous rocket, and ready adaptability for testing with smoke and air at high or low pressure, as desired. Mr. Edmund Ebdell, of Doncaster, is an exhibitor of drain-plugs for testing, apparatus for tests by smell, drain grenades, and similar appliances. Mr. A. T. Cooper, of London, shows his suction and vacuum pump for the removal of obstructions in pipes. Messrs. Burn Bros. have on their stand, among other sanitary fittings, various appliances for dealing with obstructed drains, and an "Eclipse" smoke machine, with some recent improvements. The gully dredger patented by Mr. G. B. Wilson, of Barnsley, is in reality a scraper, capable of cutting cement off the inside of drain-pipe joints and of cleaning roof spouting. Another scraper for sewers or drains is that of Mr. W. H. Gibbs, New Brompton. This is a spiral tool for the removal of obstructions, consisting of rigid scraping blades fixed on a central shaft. The back end of the scraper is screwed to receive rods, by which the apparatus can be pushed forward to the desired point. Messrs. J. S. Reekie & Sons exhibit a drain-testing apparatus which can be used for testing intercepting chambers in the following manner:—Clay is pressed round the top of the large bore plug fitted in the inlet of interceptor to make it watertight. Attached to this plug is a portion of 1-in. barrel, carried above the manhole top, through which is inserted a metal tube carrying a pressure gauge. The intercepting trap is emptied of water in the first instance, and if any water leaks from the filled chamber through the plugs in the intercepting trap, air in the metal tube becomes compressed and pressure is indicated by the gauge.

Systems of dealing with sewage are represented by the exhibits of the Septic Tank Co., of Westminster, where alternating gear for sewage filters are to be seen; of the Patent Automatic Sewage Distributors Co., of Westminster, where Candy-Whittaker sprinklers of different types are on view; and of Messrs. Mather & Platt, of Salford, where a model sewage purification works, consisting of sedimentation tanks and bacteria beds are in operation—of course, with clean water. Domestic water filtration is exemplified by the varied exhibit of Messrs. Slack & Brownlow, of Manchester; and by the Pasteur-Chamberland filters shown by Messrs. J. Defries & Sons, of London, who also include on their stand Dr. Scurfield's ventilator indicator for determining the percentage of CO_2, the "Equifex" steam disinfector, the "Equifex" purifier for milk supplies, designed by Dr. Pakes, and several other appliances for the use of hospitals and public bodies. Disinfection in another form is illustrated by Messrs. Meldrum Bros., of Manchester, models of whose refuse destructors are shown at the exhibition, while actual installations are open to the inspection of visitors to the Congress at Cleckheaton and Elland electricity stations. The Horsfall Destructor Co., of Leeds, have a small stand with various interesting models and samples of crushed clinker, suitable for making concrete and artificial stone. Messrs. Heenan & Froude, of Manchester, also represent the refuse destructor industry.

Heating, ventilation, and lighting is the next department of sanitary engineering to which reference will be made. The Richmond Gas Stove and Meter Co., of Warrington, and the Davis Gas Stove Co., of London, both have some useful patterns of gas-cooking stoves on view. Messrs. Wilsons & Mathiesons, of Leeds, exhibit gas fires, boilers, irons, and the Wilson cooking and heating stoves. Mr. G. J. Hutchings, of London has in operation a set of his patent steamers, fitting one above another, and so cooking five, kinds of food at once, without mixing the flavours, on an area no greater than is usually required for a single cooking utensil. Mr. Jackson, of Leeds, shows types of his anti-fur gas boilers for water, specially suitable for hard waters. Messrs. James Stott & Co., of Oldham, exhibit their water heater, a combination of steam and water valves giving an instantaneous supply of hot-water for public institutions; their gas-regulator; also electric fans, water-driven fans, and apparatus for plenum ventilation. Mechanical ventilation is further represented by the Sun Fan Co., of Bradford, who show belt and electrically-driven fans; and by Messrs. Matthews & Yates, of Swinton, whose stand includes fans and air-propellers of various types, driven by belt and electric motor. Among exhibitors of gas-lighting appliances we may mention those of the Anti-Vibration Incandescent Lighting Co., of Leeds, whose specialities are intended to protect incandescent mantles from shocks or vibration, however caused. The same company have also apparatus for high-pressure gas-lighting, and for what they term "atmospheric" gas lighting, suitable for the generation of gas in places where public supplies are not available. Messrs. Moffat's, of London, show the "Lucas" lamp, which is made in sizes up to 1,000 c.-p. This is another form of high-pressure gas lighting, for which it is claimed that 41 c.-p. can be obtained for every cubic foot of gas consumed, and that from 200 c.-p. to 1,000 c.-p. can be secured from a single mantle. Messrs. Wilson & Stockall, of Bury, show a brougham-ambulance for isolation hospital use, an accident ambulance van, and a neat dinner waggon. Messrs. W. Glover & Sons, of Warwick, and the Bradford Motor-Car Co. are other exhibitors of vehicles used by public authorities.

Purely structural work is somewhat scantily represented at the Health Exhibition. The only firm devoting attention to fire-resisting construction is the Fireproof Plate Wall Co., of Bradford, whose exhibit is somewhat similar to that already noticed in connexion with the International Building Trades Exhibition, and need not now be mentioned in detail. A few samples of building stone are to be found, and the Basaltine Stone Co., of Westminster, exhibit armoured kerbing and channelling, which has iron ties running longitudinally for increasing its strength. Some samples of sewer and water conduits made by this company are also included in their stand, these being made of basalt chippings, cement, and trass. It is claimed for these pipes that they are impervious to water, and that they resist the action of acids. Messrs. Humphreys, of Knightsbridge, have erected in the grounds of the exhibition a small shelter for consumptive and convalescent patients. Messrs. Burgess & Sons, of Bracknell, exhibit a neat model of a modern sanitary padded room, the entire surface being covered with sheet lead, and upon the surface thus formed suitably-shaped sections of wood, rubber, canvas, and fibre are laid, each section forming a pad. We noticed also two different types of windows and fanlights, one by the Sanitary Gully Scoop Co., of Hemsworth, being reversible for safety in cleaning, and the fanlight arranged suitably for ventilation; and the other by Mr. J. Procter, of Shipley, a somewhat similar contrivance, but hinged to allow of cleaning, and the fanlight designed so as to admit air through a hollow cornice. The "Cyclo" whitewashing machine, shown by Mr. Thomas Harrison, of Bradford, seems to be a serviceable machine for the treatment of large surfaces on the interior or exterior walls of factories and similar buildings.

From these notes it may be judged that there is plenty to interest members of the Institute in the Health Exhibition, which on the occasion of our visit was well filled with visitors in every department.

THE SANITARY INSTITUTE CONGRESS AT BRADFORD.*

THE President of the Sanitary Inspectors' Conference, Mr. Isaac Young, Chairman of Council of the Sanitary Inspectors' Association, delivered an address, and the first point taken up by him was the training of persons for the office of inspector. He thought the time had arrived when the aspirant for the office of inspector should be required to have undergone a probationary period of practical training and not merely to have had a technical training for the work. He suggested that in future the Local Government Board should recognise the appointment of assistant inspectors and sanction the payment of one half of their salaries, as in the case of inspectors. Such a step would, he was confident, bring into the ranks men better qualified to undertake the duties of the office, when called upon to accept the responsibility, than was at present the case, and he was of opinion that two years' service as an assistant inspector should be regarded as the minimum qualifying period. The paper subsequently referred to the unsatisfactory state of the law with regard to existing combined systems of drainage, certain drains requiring repairs for which the Sanitary Authority, instead of the private owner, was made responsible where documentary evidence was [not procurable to prove that the connexions had been sanctioned. A sum of not less than 30,000*l.* was annually expended in the metropolis in the repair of combined systems of drainage serving private property, and this unjust burden on the rates was increasing. The London County Council drafted a Bill in 1896, but for four Sessions in succession it was introduced without success. Another effort was being made by the Councils of the Metropolitan Boroughs to remove this increasing burden upon the rates, and they might reasonably ask, for the benefit of the public health, that the Council of the Institute would use its influence in the proper direction to remove such a stumbling block to efficient sanitary administration.

In concluding his address, Mr. Young referred to the efforts made to secure unity among Sanitary Inspectors. With that object in view, the Sanitary Inspectors' Association had altered its articles of association in such a way as would remove, they hoped, every obstacle that had hitherto prevented their forming themselves into one great body which should be influential in all parts of the country, with a central executive council composed of representatives from the various centres and holding its meetings in various parts of the country. As the mouthpiece of the Sanitary Inspectors' Association, he had felt justified in mentioning this matter, although the draft had not yet been finally approved by the members generally. "I trust," said the President in concluding his address, "that if it is not possible

* Continued from last week.

to form one Association representing the whole of the United Kingdom, that it shall be one embracing England, Ireland, and Wales, and that then an acceptable scheme of federation will be evolved by which our Scotch brethren will be federated with us. I, therefore, ask that with this great object in view we shall individually and collectively firmly resolve to achieve it, and thus help on our mutual interests and the progress of sanitation."

Mr. Wilkinson (Derby) in proposing a vote of thanks to Mr. Young, said he agreed with most of the proposals made in the address, but would prefer a period of three years instead of two for the qualifying service as assistant inspector. The motion was seconded by Mr. H. H. Spears, Chairman of the National Union of Sanitary Inspectors, who said that the proposed alterations in the articles of association of the Sanitary Inspectors' Association, virtually conceded all that the National Union asked, and he thought they would soon lead to the desired union. The resolution, on being put by Mr. W. Whitaker, Chairman of the Council of the Sanitary Institute, was carried unanimously, and the President briefly replied.

Bakehouses.

Mr. F. J. Rowe (Manchester) was then called upon to read a paper on "Bakehouse Reform." In view of the almost revolutionary change, said the lecturer, that would be effected in bakehouse construction by the Act of 1901, which, after three years of grace, would come into force on January 1 next year, every baker was asking himself—Is my bakehouse satisfactory, or can it be made so? In most cases the answer must be "No," for the majority of bakehouses were not originally constructed for the purpose, and, as a rule, they could not be satisfactorily altered. An underground bakehouse was defined as one which was more than 3 ft. below the adjacent ground level. Such bakehouses ought to be forthwith abolished; they were never adequately lighted and were always liable to be infested by creeping things hideous and innumerable. It was a defect in the Act that it allowed the right of appeal to justices or quarter-sessions. Such tribunals were apt to be unduly lenient, and they had no special competence to decide such questions except in the rare case where an architect or sanitary expert happened to be upon the bench. A certificate might often be obtained for a bakehouse that ought to be condemned, and unfortunately a certificate once obtained was irrevocable. Had it been provided that certificates should be granted subject to continued suitability, and renewed at intervals, the underground bakehouses could have been closed a few at a time year by year, and much irritation would have been spared. The bakers had in this emergency taken up an attitude of resistance in a businesslike way. They had formed associations and retained the services of architectural and legal experts to protect their interests, and had taken steps to bring the points in dispute to prompt and definite issue. Delegates to a "Home Office" conference had met in a friendly way to discuss the Medical Officer's official circular point by point, and a disposition had been shown to accept modifications and to relax hard and fast lines. A working compromise might be arrived at. A committee of the Council which would reflect all shades of opinion would be the best guarantee that every case would be thoroughly inquired into, and that humanly speaking no unfair or premature decisions would be made.

A discussion followed, in which Mr. Peter Fyfe (sanitary inspector), Mr. Lindsay (solicitor), and Mr. Bailie Anderson (Glasgow), Dr. Berry (Wigan), Mr. Bland (Barton-on-Irwell), the Chairman, and other speakers took part. It was pointed out that sanitary inspectors were only indirectly concerned with bakehouses. It was the Medical Officer of Health who had been made responsible. The Chairman pointed out that the duty of inspection would devolve upon the inspector, who would generally be required to report upon cases to the Medical Officer of Health. Dr. Berry said there were seventeen underground bakehouses in Wigan. Should any of them be granted a certificate, he thought it would be possible to take action in the case of any that were not kept in a sanitary state, but it was a great pity that certificates once granted could not be revoked. It was a flaw in this Act, as it was in the Food and Drugs Act, to allow an appeal to the magistrates, who always showed a leaning towards offenders against the laws of public health. Mr. Lindsay pointed out a special difficulty that would be met with next year in Glasgow. On January 1 all underground bakehouses would be condemned, and it would be the duty of the Local Authority to immediately prosecute. But leases would not close until Whitsuntide, and he thought Medical Officers of Health would think it advisable to wink the other eye until May. Mr. Rowe replied very briefly to the points raised in the discussion, and to the vote of thanks which had been accorded.

Smoke Abatement.

After the reading of a paper on "Smoke Abatement" by Mr. W. Nicholson (Sheffield), the Conference adjourned to Thursday, when the discussion was taken and the business of the conference was completed.

Mr. Nicholson, who is the Chief Smoke Inspector of Sheffield, avoiding sentiment, said he would deal only with the practical aspect of the question, the only aspect likely to be profitable. He stated four chief causes of excessive smoke-production, the last of which was senseless stoking. Skilled stokers could not be obtained without technical training. If the educational authorities would not provide for this training, the Sanitary Institute would have to take it up and bring it to a successful issue, as it had done in other branches of practical science. Sheffield afforded proof that prevention of excessive smoke was possible in spite of the denials of manufacturers and metallurgists. Sheffield did not profess to be perfect on this question, but it was at present practically smokeless so far as boiler smoke was concerned. Previous to 1890 it was not unusual for factory chimneys to emit dense smoke from eight to thirty-eight minutes in every hour. Thirteen years ago the authorities of Sheffield attacked the evil in dead earnest. Chimneys, big and little, were observed; the black smoke emitted was recorded; boilers and conditions of working were inspected and reported upon, and suggestions were made for improvements. The City Council at length fixed the limits of emission of dense smoke which, if exceeded, constituted an offence. Chimneys for one boiler were limited to two minutes' emission of black smoke per hour; one with four or more boilers was allowed six minutes per hour. Within two years from the commencement of the crusade the average was reduced from ten to two minutes. This line of practical procedure was recommended to be taken against any furnace, fireplace, brick-kiln, or anything else which caused a preventable nuisance. If the furnaces, apparatuses, and system of working were antiquated, then pressure should be put upon the owners to construct furnaces on the best and most modern principle, to adopt smoke-preventing appliances that had been thoroughly tested and proved effective, and to work the said furnaces on the best known system for preventing smoke.

In the animated discussion which followed, Messrs. Peter Fyfe, Bailie Anderson (Glasgow), West (Walthamstow), Norton (Middleton), Nuttall (Manchester), Lowe (St. Helens), Bland, and others took part. The Glasgow delegates explained that, in the terms of the Scottish law on this subject, the mistake of introducing the contentious term "black smoke" had been avoided, the latter defining the offence simply as "sending forth smoke in such a quantity as to be a nuisance." They also gave the results of experiments made in Glasgow to show the bad economy of emitting dense smoke. They had found in 1,000,000 cubic feet of dense smoke from 200 lbs. to 300 lbs. of solid carbon, and even 350 lbs. with very dense smoke. Air so polluted must be most injurious to health. In Glasgow alone 120 tons of carbon were annually wasted. At certain points the country was almost entirely denuded of vegetation. Nothing would grow there but a few hardy shrubs. In Scotland, where the unpaid magistrates were elected by the ratepayers, and not appointed by the Lord Lieutenants, they were more ready to convict on the evidence offered, regardless of local influences. Experiments had been made with Mond gas to abolish the smoke nuisance, and the results appeared to have been fairly satisfactory.

Mr. Nuttall and Mr. Lowe also referred to experiments with Mond gas applied to annealing and re-heating, but the results were very unsatisfactory. At Stretford (Manchester), after spending 1,000*l.* on plant, it was found that a greater nuisance was created than the smoke nuisance and the experiment was given up. At Middleton and St. Helens, similar experiments with Mond gas had failed. Mr. Bland said he would advise that where new works or extensions of works were proposed, the Local Authorities should require, on the plans being submitted, that they should show the system by which it was proposed to deal with the purification or prevention of smoke.

In the course of his reply, Mr. Nicholson said coal-gas instead of coal had been tried at Sheffield, but had proved a failure in steel manufacture. Steel made by it was found too brittle, and many tons thus made had to be rejected.

The Sanitary Conference, which was the most numerously attended of the series, concluded its sittings by passing a number of resolutions. The first, which was passed *nem. con.*, approved of the efforts now being made by the Sanitary Inspectors' Association to unite the various organisations of inspectors, the principles decided upon being such as should speedily result in the formation of one Association for the United Kingdom. Five other resolutions were passed by large majorities recommending the Council to consider and take measures in favour of the following objects:—1. To add to the technical qualifications now recognised, the condition that the candidate shall have served the office of assistant inspector for a minimum period of three years, the Local Government Board being urged to recognise such appointments and to sanction the payment of one-half their salaries as in the case of inspectors; (2) regretting the continued exclusion from the Examining Board of the Institute and the Examining Board for Metropolitan Inspectors of one or more sanitary inspectors, and urging the Council to remove the anomaly; (3) to admit as members of the Institute, at the reduced subscription of one guinea, sanitary inspectors who have held office as such for ten years and have passed the Institute's examination for sanitary inspector or that of the Metropolitan Examining Board; (4) to obtain an extended definition of the term "Drain," as provided in Section 42 of the West Ham Corporation Act of 1898; and (5) to obtain an amendment of the law relating to the sale of food and drugs, so as to enable a sanitary officer to obtain samples outside his district and to empower the officer to proceed in such cases as if the samples had been obtained within his district.

The Conference closed with votes of thanks to the President, the local secretaries, and the honorary recording secretary of the Sanitary Inspectors' Conference, Mr. Albert Taylor.

The Engineering and Architecture Section.

The sitting of the second section, over which Mr. Maurice Fitzmaurice, C.M.G., &c., presided was well attended, 170 members being present at the opening.

In his inaugural address the President dealt with the sanitary aspects of some of the engineering works in the construction of which he had himself been engaged. Some of his remarks would refer to London works, for he had spent a large portion of his life there, and some to works upon which he had been employed abroad. Among the many sanitary problems that faced the London engineer, none had been more prominent than the disposal of London sewage. In 1889 it was thought that the question had been settled for many years when chemical precipitation and the conveyance of the sludge to sea was decided upon. This system had made a wonderful improvement in the Thames. Before 1890 crude sewage was turned into the river, while now 2,600,000 tons of precipitated sludge was carried annually out to sea fifty miles below the outfalls at Barking and Crossness, and clarified effluent amounting to 230 millions of gallons per day was returned to the river. In the dry summers of the last few years the relative amounts of river water and effluent had greatly altered. The flow in the lower reaches of the Thames had diminished through the increasing demands of the water companies, while the quantity of effluent had been increasing, and there was consequently a change for the worse in the river. The London County Council had forseen the danger, and had for many years been experimenting on a large scale at Barking and Crossness on the bacterial treatment of sewage—a system which had passed the experimental stage, was coming into general use, and would be dealt with by several papers before the section. During the last two years 700,000*l.* had been spent on improvements, and

the river would be brought back to the condition of purity existing in 1894, or to one of greater purity. Turning to questions of sanitation in connexion with large engineering and architectural works, the President said he had been very much impressed with the necessity for proper medical treatment and sanitary supervision in large works with which he had been connected both in temperate and tropical climates during the past twenty years. A temporary camp of workmen where proper precautions were not taken might easily become the means of spreading disease, and a far-seeing contractor would see that he owed it not only to his men and the public but to his own pocket to arrange that sanitary matters were well looked after. As a general rule contractors did recognise what was to their own profit, and did take the necessary precautions with advantage to themselves and their workmen. In two large engineering works, the Forth Bridge at home, and the Nile Reservoir at Assouan, abroad, the execution of the work was facilitated, and good relations between employers and men were attained by having medical attendance and sanitary supervision of the best kind. He had seen works abroad where no interest had been taken in workmen, where sanitary precautions were neglected, and where medical attendance was only obtained with difficulty. He had seen men who were ill, or had met with an accident on such works, lying in bed in filthy huts for days without medical attendance, without proper food, without any sanitary convenience, and absolutely uncared for. The workmen, of course, recognised these differences and would refuse to work for employers of the latter class, if there was any alternative. Even abroad the callous employers were now in a minority, and would, he hoped, soon disappear. Before concluding his address the President referred to the provision of better dwellings and of improved sanitary surroundings for the poorer classes, a question closely connected with the subject of locomotion in cities and towns, to which he had devoted a good deal of time. The exodus to the outer ring of towns, even now very great, would increase in proportion to the facilities given for rapid travelling at cheap rates. The time would come when a large proportion of the working classes would think nothing of living six or seven miles away from their work where they could obtain larger houses at lower rents than they paid for tenements in central areas. Tube, and elevated or underground, railways would have stations much further afield, providing for express local traffic, and attaining an average speed of twenty miles an hour. The twenty-five miles of new railway now under construction in New York would be one of the most complete systems of urban traffic in the world, and would be an object-lesson to other municipalities in effectually dealing with a very difficult problem. In all large towns the greatest vigilance ought to be displayed in preventing any narrowing of roads by new buildings, and every opportunity for widening roads should be taken advantage of when old buildings were pulled down. The gradual building of small houses for the working classes on the outskirts of towns had been accompanied in many cases by the formation of narrow streets and roads. No one could say what the development of motor traffic would be, and to what distance outside towns electric trams would run. It is all the more necessary, therefore, to keep the entrances to our towns and the country roads approaching them of a good width, so as not to throttle the traffic at these places at a future date. The development of motor traffic ought from a sanitary point of view to be encouraged. It seemed more than probable that a diminution in the number of horses in the streets must be accompanied by an improvement in the general health, or, at all events, by a diminution in many of the throat and eye troubles so prevalent. In concluding his address, the President said that "the provision of streets and roads of ample width, and the satisfactory maintenance of such thoroughfares, are the best means of encouraging the development of electric trams and motor traffic. The provision of quick surface locomotion on wide roads may, I hope, do away with the necessity of spending an hour a day in tunnels underground—a penance which I am sure we were never meant and ought not to be called upon to undergo."

A cordial vote of thanks was voted to the President on the motion of Mr. Whitaker (Chairman of Council of the Institute), seconded by Professor H. Robinson, which the President briefly acknowledged, and then called for three papers on the purification of sewage problem, respectively prepared by Mr. D. Archibald, Mr. W. Kaye Parry, and Professor H. Robinson — the discussion to follow the reading of the third paper.

Purification of Sewage.

Mr. Douglas Archibald compared the merits of chemical and septic tank systems of treatment as preludes to artificial filtration. He contended that recent experiments, and particularly those of Mr. Harding, at Leeds, had condemned the tank-less double contact system, so much upheld at one time by Dibdin, and it was now, he thought rightly, regarded as dead and buried. The alternative methods were, therefore, reduced to three, all involving tank settlement, viz., (*a*) settlement without septic action, (*b*) settlement with septic action, and (*c*) settlement aided by chemicals. Mr. Archibald adduced copious tables to prove that the third system, where the chemicals were properly employed, and the resulting sludge was utilised, gave by far the best results. By a combination of effective chemical precipitaton with filtration, as at Chorley and at Kingston, the author contended that the highest purification could be obtained on the smallest area, a purification of 55 per cent. beyond the average attained in the septic tank system, occupying six times the area.

Mr. W. Kaye Parry's paper on "The Present Position of the Sewage Problem" traced the developments of expert opinion during the last six years, as shown at succeeding congresses and meetings of the Sanitary Institute since 1897 (congress at Leeds). The famous experiments at Exeter with the system of Cameron, in which a preliminary treatment of sewage in tanks by anærobic bacteria seemed to show such excellent results, had led experts like Messrs. Dibdin and Thudicum to speak very confidently about the economies that would result from the new septic system of treatment. The author had repeatedly maintained in opposition to the optimistic believers in the septic tank system that in every system of treatment there must be some residuum which, if it were not removed, would sooner or later clog the bacteria beds, whereas if it were removed it would constitute sludge, which must be handled and disposed of. The costly works at Manchester, described at the Manchester congress last year by Mr. J. P. Wilkinson and Mr. G. H. Fowler, proved the unsoundness of the forecasts of experts as to the economies that would follow the general adoption of the septic tank system. Such works as those at Manchester, for a population of 1,000,000, would cost 700,000*l*., or 13s. 10d. per head. The *bête noire* of sludge still remained, and although substantial progress had been made in the quality of effluent produced, the question of sludge disposal was by no means a thing of the past.

Professor Robinson's paper on the "Bacterial Treatment of Sewage" recalled to the notice of experts the importance of the conclusions stated in the Report of the State Board of Health of Massachusetts many years ago. These conclusions did not appear to have been kept in view by subsequent experimenters. The London County Council, instead of following the conclusions and adopting the results of the Massachusetts reports, had spent a great deal of money in experiments to arrive at similar results. Why should they spend money to prove what had been already proved by the Massachusetts Board. We ought to have started where the Massachusetts Board had left off. The London Council had continued experiments begun by Mr. Dibdin, but the various reports were inconsistent and did not greatly elucidate matters. Satisfactory results could be obtained by treating sewage in bacteria beds by continuous filtration through interstices in the presence of air on the lines indicated by the Massachusetts Board. Public money could be usefully expended in experiments directed to determining the best materials and depth for both classes of bacteria beds, also the most effective rates of working. A series of contact beds and of continuous trickling beds worked side by side under similar conditions of flow would give results of the greatest service. Other experiments of practical value could be suggested. If such were carried out, valuable information would be afforded at comparatively small cost for the guidance of those who have to advise as to sewage disposal.

A sustained discussion followed, in which Dr. Rideal, Professor Robinson, Mr. G. H. Fowler, Mr. Watson (Birmingham), Mr. Robinson (Durham), Mr. H. A. Martin (Exeter), Mr. W. Kaye Parry (Dublin), Mr. Douglas Archibald and Mr. Parker (Newcastle), took part. The majority were on the side of the septic tank treatment and the modifications of it, as against chemical precipitation, with subsequent filtration, as advocated by Mr. Douglas Archibald.

Details of a Hospital Ward.

"Details of a Hospital Ward," was the title of a paper by Mr. Saxon Snell. In treating of "some details and their principles recalled," the object of the author was rather to recall one or two old and sound principles that seemed in danger of being forgotten, rather than to advance any new theories. There were instances in new wards constructed on the latest principles of failures which were absent from the older and entirely out of date buildings. Many examples were cited in which good old principles had been obviously forgotten. Floors should be non-absorbent and not liable to harbour dirt. Nowadays no one thought of using plain-jointed, soft wood floors, because in addition to being absorbent the material was bound to shrink, leaving any number of crevices for the secretion of dirt and dust. Floor sweepings well wetted and impregnated with soap made a horrible compound. Terrazzo floors which were impervious or floors formed of hard wood blocks were the best. The skirtings should be of the same materials as the floor, and should be rounded so as to form a good hollow. With regard to wall surfaces experts differed in opinion, arising out of differences of opinion about ventilation. For hospital wards impervious walls were mostly in vogue at present. Tiles gave an impervious and even surface, but they afforded too many pockets for dust. The ideal surface would be an unbroken and polished surface such as obtained on tiles, but affording no ledges for dust. Keene's cement or sirapite could be brought to a polished surface. It would be possible to cover permanent wall paintings with glass let in flush with the wall surface. Ceilings should be non-porous and they were best painted. Ordinary sash windows involved many angles, crevices, and hidden voids. Casement windows with solid frames were not open to that objection, but their advantages in other directions were questionable. Little could be said about doors in a hospital ward, except that they should be wide enough to allow of the passage of a bed. With regard to furniture, for which the architect was not generally responsible, general principles should govern the selection of objects, which should all be easy to clean and of non-absorbent material. Cupboards were generally harborers for mysteries and ought to be abolished. The one cupboard necessary for holding medicines, surgical, and medical appliances should stand out in the centre of the ward. It should be framed and glazed all round so that the doctor on his rounds can see all round it, through it, and even under it. With regard to lavatory basins, which obviated the old objection of the nurse following the doctor with a hand-basin, the improvements in design and construction of fixed lavatories have overcome the objection to having them in a ward. The first he saw was in a hospital not even yet finished. It was of quite an ordinary pattern and fixed close to the wall, but he regretted to add that underneath, the supply, waste, overflow, and anti-siphon pipes—all on the surface of the wall—reminded one of Medusa's head.

Publicity, or "openness," in every part of a ward and its adjuncts was strongly insisted upon, except, of course, in bathrooms and ward conveniences. When patients knew they could not escape casual observation their behaviour was likely to be most correct, and the nurses themselves were none the worse for the lack of opportunities of concealment. In conclusion, the author put in a strong plea on behalf of the nurses. Nurses were often very much overworked. He thought it a great pity that hospitals were not able to employ more nurses and for shorter hours. It was better that nurses should always be employed when on duty for shorter hours, than that the weariness of long hours should lead them to lounge or neglect their duties when occasion offered.

The discussion was opened by Mr. T. W

Aldwinckle, who said that the terazzo floor was cold and liable to crack. It was generally used in Germany, but in a hospital he had visited near Hamburg the terazzo floor was warmed. The teak floor was hard, and made the best possible floor, but it was more expensive. When waxed and polished it had a warm, cosy tone. For wall surfaces they could not get anything better than Keene's cement, which after a year or two could be painted. With regard to windows, Mr. Snell seemed to favour the Middlesex type. He thought the old-fashioned double sash, with hopper above and the lower sash opaque, was more cheerful. It was sometimes difficult and perhaps dangerous to open the casement window. The open fireplace was a very desirable thing. It not only conduced to cheerfulness, but successful treatment, which was one of its best points. Stoves should be used for warming only and not for ventilation.

Mr. Herbert Jones thought Mr. Snell's paper most practical, because it dealt so much with the details and not with the general features of hospital construction. They must make it as easy as possible to keep clean a hospital ward. They should endeavour to make the administration as costless as possible. To diminish the staff by one maid would be to save 50*l.* a year. If wards were placed on both sides of a corridor they should not be of the same size. It would be a better arrangement for twelve beds, to have one ward of eight and the other of four, rather than two of six beds each. They must have an impervious floor like terrazzo. He personally did not approve of terrazzo, not because it was cold, for it was not cold, but because it was unsympathetic. It was very tiring to walk upon, and the nurses complained that it made them much sooner tired. The flooring should be elastic and sympathetic; cracks could be filled up. All angles should be curved. At the Burton-on-Trent Hospital the angles between the ceiling and the wall had a curve with a radius of 9 in. or 10 in., the effect of which was pleasing, giving a dome-like appearance to the ceiling. Aspinall's enamel had proved a failure, the enamel peeling off. At Cardiff all the walls were covered with a vitreous cement. If the ceiling was non-porous it would crack. The ordinary double sash-window was a great disadvantage, the space for the weights forming a perfect dust-bin. With regard to doors he had seen in Birmingham the Dowson-Taylor door, which was practically solid, there being no panel anywhere.

Dr. Freemantle (Guy's Hospital) said the question of how to make the wards look bright had perplexed them a good deal at Guy's. They had artists like Mr. Watts and Holman Hunt who suggested that they should try to get a company of young painters like the pre-Raphaelites to join together for the purpose of painting their walls. The difficulty was that if the walls were painted ever so beautifully the scrubbers would soon scrub the paintings off, and to cover them with plate-glass would cost 2,000*l.* per ward. He would like to know whether some kind of wall surface could be devised suitable for painting.

Mr. Saxon Snell, in replying to the various criticisms, congratulated Mr. Jones on having been able to get an opinion from a nurse. That was more than he had been able to do. "Sympathetic" was the right term to apply to the kind of floor they wanted. For doors they wanted solid joinery. The new Canadian doors would be made for Charing Cross Hospital. He wished somebody would intercede for him with some pre-Raphaelite band of painters. They might be able to get their canvasses covered with plate glass.

Public Baths.

Mr. Saxon Snell was subsequently called upon to present a paper on "Public Baths; the Influence of Planning and Construction upon the Cost, Maintenance, and Administration."

Baths, so desirable in the cause of public health, did not pay, said the author, and he proposed to ask why they did not pay and how they could be made to pay. In the first place, he hoped they would be able to get cheaper materials. The main cause of unremunerativeness was bad sites. Whenever a municipality had a cheap site, they told the architect to build a bath upon it. Short-sighted economy had been responsible for the selection of some of the most extraordinary sites that had taxed the ingenuity of architects to use to advantage. A bad site meant waste of space in passages and long corridors, and straggling and therefore uneconomical plans. A table was given of eleven modern establishments in London and the provinces in which the corridor area varied from 6,600 square feet to 1,013 square feet, every square foot of corridor more than necessary involving the waste of 20s. On a good site the corridor area, as shown by the table, was reduced to 112 ft. per section; on bad sites it rose to 500 ft. to 660 ft. The Corporation of Bradford were building a series of baths for the whole city, designed and carried out by Mr. F. E. P. Edwards, in which the corridor area was reduced to from 70 ft. to 80 ft. per section. In the direction of economy was the change from slipper to spray baths. In an establishment, say, of fifty baths the saving in structure and fittings alone would probably exceed 40*l.* per bath, or, say, 2,000*l.*, and supposing that each bath was used on an average during the year three times daily, water would be saved to the extent of over 1,000,000 gallons, which at 6d. per 1,000 equalled 25*l.*, or the interest on over 800*l.* To this must be added the saving in fuel, &c., in heating the water, and less cost of attendance.

In many establishments the energies of bath attendants were employed in an unsatisfactory manner. If the number of attendants on duty was calculated for the busy season, they would not have sufficient to do to keep them employed at other seasons, and they would get into the worst of all habits—lounging. If they were to be kept employed they must throw over the trade-union fetich of "one man one job," and nowadays, on public Boards, it was necessary to reckon with trades-unionist feeling.

In the discussion which followed, questions were asked as to the best manner of heating and the best position in the longitudinal section of a swimming-bath to form the deepest part.

Mr. Councillor Upson (Maidenhead), said he had been charged to find out how a bath could be the most economically heated. After visiting a great many establishments he had been unable to decide on the best method. The men in charge were, as a rule, happy-go-lucky sort of people. Generally speaking, baths were not run as business establishments. He was glad to hear the spray-bath recommended rather than the slipper. The cost of a bath ought not to exceed 2d., instead of 6d. or 8d., which was charged now at some establishments. One penny should be enough to pay for a spray-bath. The deep part of a swimming-bath should be about 10 ft. from the end with graduated incline to the ends.

Mr. F. E. P. Edwards (City Architect, Bradford) said the sites of the baths in Bradford were all good, and well isolated by good streets. He would like to hear from Mr. Snell whether he preferred the rose douche or the ring douche. How would he ensure that a bather did not scald himself? The question of water was a troublesome one in Bradford. They drew water from the moorland, and the peaty matter gave it a brown tint. It had been suggested to have coloured tiles for the bottom. With regard to the deepest part of swimming-baths, they placed it 10 ft. from the end, and with slowly rising inclines they got a good square base.

Mr. Councillor Totter (Bradford) asked whether Mr. Snell knew of any bath which was making a profit. In Bradford they were a source of great loss. They looked for their profit to the future in the improved health of the community. He was very glad to find that they in Bradford were on so many points in agreement with Mr. Snell.

Mr. Saxon Snell, in responding to a vote of thanks, replied to the various questions raised. The deepest part of a swimming-bath should be from 7 ft. to 10 ft. from one end, and it should slope upwards both ways to the ends. He had heard of a bath in which the deep part was about 20 ft. in the centre. It sloped rapidly up towards the shallower end and then inclined very slowly. That form saved water. With regard to heating, the best results might be obtained by circulating the heated water by means of a calorifier. He was very glad to see that Bradford had so many good sites. With regard to the douche, he said that with cold water it was better to employ the ring douche. With hot water there was no objection to the rose douche. With regard to the peaty colour of Bradford water, as they had no peat in London, that was not a difficulty. Dark blue tiles had a distinctly enlivening effect, and with the brown water of Bradford the effect should be beautiful. Bradford did well to have free baths. Let them encourage the habit of bathing; then after a while the baths would become popular and would pay.

The section, jointly with Section III., met on Friday morning to discuss six papers on the treatment of sewage and trade effluents, but through the absence of five out of the six authors of papers, the meeting—a very good one—was a comparative failure. In other sections papers were read on "The Garden City Scheme" by Dr. Fremantle (Medical Officer of Health, Herts), "Open Spaces" and "The Housing of the Working Classes Act," the latter, which was read by Dr. Eustace Hill, suggesting amendments of the Housing of the Working Classes Act of 1890, Part II. Dr. Hill's suggested amendments were adopted by the Conference of Municipal Representatives and formulated in a resolution forwarded as a recommendation to the Council of the Institute. The suggestions were (1) to attach to the word "owner" the same meaning as in the Public Health Act, 1875; (2) to make the owner of a house closed by order liable to continuing penalties during continued occupation; (3) requiring notice to administrative county before determining a closing order; (4) giving sanitary authorities power to make a demolition order where a structure is dangerous or injurious to health; (5) giving County Councils power to enforce the Act in urban districts other than muncipal boroughs; and (6) giving right of appeal against the dismissal of an application for a closing order.

The Congress Lecture, on "Architecture in its Relation to Hygiene," was given on Thursday evening by Mr. J. Slater, F.R.I.B.A., at the Technical College.* At the closing general meeting of the Congress, held at the Church Institute on Friday, the Secretary of the Institute, Mr. White Wallis, stated that a total of 1,556 members had attended the sittings of the Congress, for which the most excellent arrangements had been made by the Local and Executive Committees. Among those attending were 700 delegates from 335 Local Authorities, and 451 members and associates of the Sanitary Institute. The presidents and secretaries of sections and conferences presented reports, and the proceedings of the Congress closed with a series of resolutions of thanks to the Earl of Stamford, the Mayor of Bradford, Mr. Councillor Godwin, Dr. Arnold Evans, and the numerous bodies who had contributed to the success of the Congress.

THE INTERNATIONAL FIRE CONGRESS.†

THE sitting of the Congress was resumed on Wednesday morning last week, in the Caxton Hall, Westminster, Mr. A. Darbyshire, F.S.A., presiding over the Building Construction and Equipment Section (Section 1).

The first paper taken in this section was by Mr. Bernard Dicksee, District Surveyor, London, and was entitled:—

"Fire Preventive Sections of the London Building Act."

Mr. Dicksee said that the existing law in London dealing with the construction of buildings is comprised in five Acts:—The London Building Act, 1894, and the London Building Act, 1894 (Amendment) Act, 1898, dealing with building generally. The Metropolis Management and Building Acts Amendment Act, 1878, Sections 11-13, and the Metropolitan Board of Works (Various Powers) Act, 1882, Sections 45 and 48, dealing with theatres and like buildings. The Factory and Workshop Act, 1901, dealing with exits from factories and workshops. His paper would deal only with the fire sections of these Acts, their effect upon the construction of buildings, and suggestions for the amendment of the law where such has been found by experience to be necessary or desirable.

After some preliminary remarks, he said:—

'The fire sections of the London Building Act may be grouped into four groups.—1. The separation of buildings from each other to prevent the spread of fire from building to building. 2. The sub-division of a building to confine the fire to one portion of the building. 3. Fire-resisting construction to prevent as far as possible the commencement of fire. 4. Provisions for exit in case of fire. In some cases the same section would come within more than one of these groups, but I think the most

* We hope to give this address in our next issue.
† Continued from last week.

convenient way of dealing with the subject will be in this form.

Separation of Buildings.—Buildings may be separated from each other, either directly by party-walls and party-floors, or indirectly by their external walls and roofs. The first schedule provides that every building shall be enclosed by walls of brick, stone or other hard and incombustible substances, and sets out the method of construction and the thickness; this latter is only of importance for our present subject in so far as that it is necessary that a wall should be stable to prevent the spread of fire; it must not collapse during a fire; on this score there is nothing to fear from the thicknesses in the schedule. These enclosure-walls will include party-walls and external-walls, which the London law requires to be of the same thickness.

The use of the party-wall in preventing the spread of fire has been established on many occasions, but in no case more so than in the Cripplegate fire, where the fire, checked by the party walls, spread by crossing and recrossing the street. The party wall is required to be carried up above the roof of the highest adjoining building, 3 ft. in the case of a warehouse exceeding 30 ft. in height, and 15 in. in the case of other buildings; it must also be carried up 1 ft. higher and wider than any dormer, &c., on an adjoining roof, and as high as any portion of the roof within 4 ft. of the wall. This figure is probably enough, except that in the case of warehouse buildings less than 30 ft. high the party-wall should be carried up 3 ft. above the roof; it should be remembered that it is the class of building more than the height that makes the risk, and the 3 ft. parapet is required as a screen for firemen to work behind. London, however, is well in advance on this point, as the Montreal Building By-law of 1902 only requires 12 in. in any case, and the Glasgow Building Regulations Act, 1900, requires 2 ft. for warehouses and 12 in. for other buildings.

The efficiency of a party wall to prevent the spread of fire depends upon its integrity; it is, therefore, of the utmost importance that openings in it should only be very sparingly allowed and under close supervision. Buildings may only be united when wholly in the same occupation, and when, looked upon as one building, they are entirely in accordance with the Act. If the buildings, taken together, exceed 250,000 cubic feet in contents, the openings must be closed with iron doors ¼ in. thick in the panel, one on each side of the wall, fitting into proper frames, and no woodwork of any kind is allowed; the openings must not exceed 7 ft. in width by 8 ft. in height, unless the doors be at least 24 in. apart, in which case the opening may be 9 ft. 6 in. high. In some cases the small width allowed for this opening presses rather hardly, as it will not allow of the passage of a van, a not infrequent requirement of the tenant. A great defect in this section is the lack of enactment as to fastenings; a pair of iron doors are of little use unless securely fastened at each edge; there should be at least three fastenings top, middle, and bottom) required on the lock style, and a heel bolt in the centre of the hanging style in addition to the pivots. This deficiency is partly removed in the case of sliding doors, which must be "properly constructed"; this gives the District Surveyor more control.

It is open to question whether the iron party wall doors required by the Act are the best doors for the purpose; power should be given to the County Council, on the advice of the District Surveyors' Association, to make by-laws to allow the use of doors constructed of other material.

When buildings that have been united cease to be in one occupation, notice must at once be given to the District Surveyor, and the openings must be at once bricked up. There are, however, doubtless many cases where no such notice is given, and the omission is difficult to detect. It should therefore be enacted that the owner or occupier of any buidiing connected with an adjoining building by an opening in the party wall, should make application to the District Surveyor for a certificate as to each opening; such certificate should state that the opening is in accordance with the Act, and should be renewable every two years. If at any time the District Surveyor discovered that the opening was in any way irregular, or that the buildings were no longer in the same occupation, or that an opening had been surreptitiously made, he should have power to refuse a certificate, and to cause the opening to be bricked up. The District Surveyor would thus have a register of all permitted openings, and could therefore keep better control over them.

But perhaps the greatest difficulty as to party wall openings a District Surveyor has to meet is the case where one opening has been made surreptitiously uniting two buildings; this may be, and probably is, quite irregular; but, no notice having been given, and the work having been done as secretly as possible, the existence of the opening never comes to the knowledge of the District Surveyor, until such time, perhaps years afterwards, that it is desired to make another opening, of which notice is given. The second opening does not unite the buildings, for they were united when the first opening was illegally made; the District Surveyor is therefore powerless to prevent the new opening, or, in many cases, to cause the old opening to be closed. Thus the owner is allowed to profit by his illegal action. This point formed the subject of a decision of the High Court in the case of Woodthorpe *v.* Spence (63 J. P. 246), when the District Surveyor failed for the reason just stated. The remedy for this would be the insertion of a clause making the formation of any subsequent opening a uniting of the buildings in law, though not actually in fact, and declaring that such subsequent opening shall be subject to the same rules as though it were a first opening. The system of certificates above suggested would also greatly assist matters.

Section 74, sub-section 1, requires buildings to be separated by party or external walls or "other proper party structures;" there is a definition in the Act of a party structure but none of a "proper party structure." Clearly it is intended that the separation shall be of fire-resisting materials, equal to a brick wall. If the words "party arch or party floor" were substituted for "proper party structure" the law would be clear, as section 71 deals with the construction of party arches and floors, requiring brick, stone, or other incombustible materials, of the thickness of 8½ in.; the floors to be constructed in such manner as may be approved by the District Surveyor.

The question whether openings, such as windows, are or are not permissible in the upper portion of a party wall overlooking the roof of the lower building when the two buildings are of different heights has caused much discussion and difference of opinion; but there can be no two opinions as to the danger of such openings from the facility they afford for the spread of fire, particularly from the lower to the higher building. This danger was fully proved by the fire that took place in December, 1898, in New York, when almost the whole of the upper stories of the Home Life Insurance building, overlooking the adjoining lower building, were burnt out by a fire that was communicated from the lower building through the windows overlooking the roof.

Should any dormer or other similar erection of combustible material be placed upon any roof within 4 ft. of the party wall, the Act requires the party-wall to be carried up 1 ft. higher and wider on each side than the erection; but when the window is advanced to and fixed in the party-wall, thereby increasing the danger, it is the contention of some persons that such an arrangement is allowed by the Act. This view appears to be based on the decision of the Chancery Court in the case of Weston *v.* Arnold (22 W.R. 284), but it must be remembered that this was a case not under London law, but the Bristol Improvement Acts, 1840 and 1847; the requirements as to party-walls being different under those Acts, which do not require the party-parapet; moreover, it was not an action to enforce observance of the building law, but an action for injunction to restrain the defendant from blocking up a window opening that was being reconstructed in its old position in a re-erected party-wall. The judges naturally supported the owner of the right of light, and held that unless there is something to the contrary in the Act a wall might be in part of its length and part of its height a party-wall and an external wall for the remainder, but they did not decide that such must be the case under all circumstances. Indeed, they cited instances to the contrary.

A case more in point is that of Williams *v.* Bull (only reported in the *Times* February 15, 1890), decided under the repealed Metropolitan Building Act, 1855, where W. had raised the party-wall between his building and B.'s under the powers granted him under that Act; but when B. subsequently sought to again raise it he objected, unless B. paid him for a share in the first raised portion, which he claimed to his own external wall; it was however decided to be a party-wall, and that B. was entitled to use it without payment.

There is yet another decision, that of Drury *v.* Army and Navy Stores (60 J.P. 421), bearing on window-openings in party-walls, but that case deals not with party-walls proper, but only with quasi party-walls, the expression party-wall being used merely as a convenient phrase for sub-dividing walls within the same building, used to divide a warehouse into fire risks. In this case the windows were held to be allowable, and I am afraid that this decision will encourage the view that they would be allowable in party-walls dividing buildings in different occupations, but I do not think that this view is justified by the sections of the Act. The actual point has never been before the High Court.

As openings are prohibited in party-walls except in accordance with the provisions of the Act as contained in Section 77 above cited, the whole question will depend upon the point as to whether the upper portion of the wall is a party-wall or an external wall; the only London case dealing with party-walls proper (Williams *v.* Bull) is in favour of the former alternative. Section 58 limits the party-wall to such portion of its length as it is used by buildings on each side, and therefore, by implication, does not so limit the height. Section 101 allows the reconstruction of an existing ancient light in a party-wall; it would, therefore, appear that the upper portion is a party-wall, as that would be the only part of the wall in which an ancient light could exist. Section 59 requires the party-wall to be carried up 1 ft. 3 in. or 3 ft., as the case may be, above the roof of the highest (not the lowest) building adjoining. Section 88 (5) confers on the building owner the right to raise a party-wall, not to erect an external wall on the party-wall. On the other hand, the only argument in favour of the external wall theory is the Bristol case, which is, in my opinion, not a ruling case for London law, as the London Building Act does in fact make the enactments that were held in the Bristol case to be necessary to make the wall a party-wall.

The question, however, is sufficiently open to doubt to make it desirable to amend the Act by inserting a section declaring the wall to be a party-wall for the full height of the highest building, and prohibiting openings except in accordance with the rules of the act as to openings in party-walls.

The indirect separation of buildings has not received in the Act the consideration it deserves. Beyond the requirement that buildings shall be enclosed by brick or stone walls, that roofs shall be covered with slates, tiles, metal, or other incombustible materials (Section 61), the prohibition of woodwork in the external face of external walls (Section 55), the requirement of a parapet whenever any part of the gutter is of combustible material (Section 57), and the limit of the area of openings in external walls above the ground story to one-half the area of the wall above that story, little or no attention has been given to the subject. On the contrary, one section, though not strictly describable as a fire section, has decidedly an opposite effect.

The proviso of Section 13 (5) enacts that no dwelling inhabited by the working classes shall be erected within the prescribed distance of the centre of the road to a greater height than the distance between the front wall and the opposite side of the street. Now the height of the building is defined as the height of the front wall, or to the base of the gable, if any, and does not include the two stories in the roof permitted by Section 62 (1), the surface of which roof may be inclined at an angle of 75 deg. to the horizon.

Suppose then the case of a street or alley 12 ft. wide (and there are many such), the front wall may only be 12 ft. high, but above that there may be two stories in the roof with an almost vertical front enclosed by a stud partition covered with slates. Surely this is an encouragement to the spread of fire. Should the ground story be a shop there would be no brickwork at all in the front. The inclosure of the front of such houses with brickwork should not be discouraged. The defect might be amended by limiting the height above the road of the ceiling of the topmost story to 20 ft. more than the distance of the front wall from the

opposite side of the street or by keeping the whole building within an angle of 45 deg. of the horizon, taken from a level of 16 ft. above the street level at the opposite side of the street.

The crowding together of warehouse buildings or narrow streets and contracted light wells in the rear is a great source of danger; the four great fires in the City of London—at Wood-street, St. Mary Axe, Cripplegate and Barbican—are to be attributed to this crowding. The source of weakness is clearly the proximity of window openings and roofs to each other. This question is nowhere dealt with in the London Building Act, though it is somewhat imperfectly in the Montreal Building By-law of 1901.

It is suggested that in warehouses all roofs should be fire-resisting, that all windows overlooking a street of the width of 20 ft. or less, or a light well or area of a width of 20 ft. or less, into which the windows of other premises look, should be fitted with metal frames glazed with wired glass, or be fitted with shutters of hard wood, iron, or other fire-resisting materials capable of being closed from the inside; and that all external walls abutting on such streets, wells or areas should be carried up as parapets 3 ft. above the roof.

The Subdivision of Buildings.—Warehouse buildings must be subdivided by party walls so that no compartment exceeds 250,000 cubic ft. in contents, but the County Council have in certain cases the power to allow an extension of this figure to 450,000 cubic ft. Although the more recent Glasgow Act of 1900 allows a limit of 350,000 cubic ft., the London limit of 250,000 cubic ft. is excessive, unless all the floors of the building be fire-resisting. The fire insurance companies encourage a 100,000 cubic ft. limit by charging an extra premium on larger buildings, and I am inclined to the view that that should be the limit—the extreme limit — where fire-resisting floors are not employed; but I should prefer to see all floors in warehouses over ten squares in area made fire-resisting. The question of the subdivision by fire-resisting floors, instead of walls, came before the High Court under the corresponding section of the 1855 Act in the case of Holland and Hannen *v.* Wallen (70 L.T. 88) when it was decided that a subdivision by floors did not comply with the Act.

Buildings exceeding ten squares in area used in part for trade or manufacture and in part for dwelling are required to be separated by fire-resisting walls and floors, so as to protect the persons in the dwellings in case of an outbreak of fire in the trade portion. This section was inserted in consequence of several serious fires in shop premises, resulting in loss of life. It has, however, been very unfortunately drafted, and has afforded much scope for the ingenuity of judges, enabling them to place most original constructions upon it. No real difficulty was found in the working of this section until the decision of the High Court created one.

The decision of the Court in the case of Canitt *v.* Godson (1899 2 Q.B. 193) removed public-houses from the operation of the section, and although the plaintiff succeeded on the appeal the decision of the Court of Appeal in the case of Dicksee *v.* Hoskins (65 J.P. 612) practically did the same for beerhouses. In consequence of these two decisions the present effect of the section is so uncertain that its immediate reconstruction so as to carry out its original intention is of the utmost importance. Buildings exceeding twenty-five squares in area containing separate tenements used as dwellings or offices, are required to have the floors constructed of fire-resisting materials.

The corresponding section of the Act of 1855 required the rooms or tenements to be separated by walls and floors of fire-resisting materials; this was found to be impracticable in the case of office buildings, on account of the nature of the tenancies; rooms let together to one tenant are frequently subsequently let separately to a number of tenants, but the mistake was made of remodelling the section in such a way that the fire-resisting partitions between different dwellings have been lost. The section should be redrafted, treating office buildings on the lines of the 1855 Act.

The limit of the size of the building should not, however, depend upon the area, but upon the height, or the cube, which would include both height and area; the risk from fire is clearly greater in a building of 20 squares in area and five stories in height, than in a building of 100 squares in area and one story in height, yet the former does not come within the meaning of the section, but the latter does. No limit is at present placed upon the cubical extent of these tenement buildings; this should be amended. It would not be unreasonable to fix the limit at 250,000 cubic feet.

Fire-resisting Construction of Buildings.—As has been before stated, external and party walls must be of incombustible materials.

Projections from the face of the wall are dealt with in Section 73; these are required to be of "fire-proof" material. Evidently the use of this word is an oversight; it is imported from the Act of 1855. The word "fire-resisting" is evidently here intended, as in every other case that word is substituted for the word "fire-proof" of the older Act. Wooden eaves and large boards are permitted in the case of detached and semi-detached dwelling-houses, and in terraces where the party wall is corbelled out 4 in. in advance of the woodwork; but in all cases the wall must be built up solid behind such cornice. It is difficult to see why two semi-detached dwelling-houses should, for the purposes of this Section, be deemed one building; this proviso was new to the 1894 Acts and should be struck out.

Shop fronts are allowed to be of wood and to project from the face of the wall, with some very slight provisions for the interception of the woodwork of one shop from the next. These rules might well be revised; as at present constituted, a one-story corner shop, projecting a considerable distance from the building to which it is attached, may, with the exception of the party wall against the adjoining shop, be constructed entirely of wood, the roof only being covered with metal.

Bond timbers and wood plates are prohibited in party walls, but no such regulation exists for external walls; some restriction is surely desirable. The collapse of a wall in case of fire is, in my opinion, often caused by the improper use of timber built into walls. A floor-plate or lintel is frequently built into a 9-in. or 14-in. wall to within 4 in. of the external face of the wall, and this is carried across a small brick pier between two openings, rendering the destruction of the wall certain in case of fire or the decay of the timber.

In the Montreal regulations wooden lintels are only permitted when at least 12 in. of brick or stone intervene between the ends of the two lintels bearing on a pier. If wooden lintels be used they should be required to be arched over with a relieving arch.

Bressummers, if of wood, must not approach nearer than 4 in. to the centre of the party wall; but there is nothing to prevent them being of wood, however objectionable that may be, nor to prevent them from being entirely supported on wooden story posts. There is not much use in having a fire-resisting wall supported on an easily-consumed support; the district surveyor has special power as to the strength of bressummers and their supports, but not as to the material. In this particular Glasgow is in advance of London; in that city every bressummer, arch, lintel, column, or other support of a wall must be of fire-resisting material, and if of iron must be protected from fire. In Montreal, also, wooden lintels or bressummers are only allowed up to 5 ft. span in the inside of an external wall, and up to 6 ft. in an internal wall.

The remaining fire sections, relating to internal construction, are practically limited to the provisions for the construction of chimney-flues, hearths and stoves, and pipes for conveying hot water, steam, and the products of combustion. These hardly call for special notice, and they have been substantially the same for the last fifty years, and have on the whole worked well, though some minor amendments would be advisable. The amendment new to the 1894 Act, requiring the flue from a trade stove, or a furnace or steam boiler, to be surrounded with 9 in. of brickwork, was a much wanted improvement. I have myself known stationery, placed against a party wall in which there was a flue from a fish stove 7 ft. away, to be singed.

The construction of public buildings is not subject to the ordinary rules of the Act, but they must be constructed in such manner as the district surveyor may approve; the same applies to the conversion into public buildings of buildings originally constructed for a purpose other than public. There is an appeal from the district surveyor's requirements to the Tribunal of Appeal. This regulation may sound very autocratic, but during the nearly fifty years it has been in force it has been found to work well.

Having dealt so far with the requirements of the Act for the construction of buildings, I now propose to refer shortly to some very important omissions from the Act, of subjects that demand legislation. Perhaps the most important of these is the question of the proper protection of iron and steel from the action of fire. The London County Council have, by Section 164, the power to make by-laws on this subject, and it is not to the credit of that body that nine years after the passing of the Act no such by-laws have been made. But I venture to think that this is far too important a subject to be dealt with by by-laws; there should be a section in the Act itself requiring the proper protection of all columns, stanchions, bressummers, and joists. No one who has given any consideration to the subject can have failed to be impressed with the danger of permitting a corner building used for shop purposes to be supported entirely upon cast-iron columns and iron girders without any attempt to protect the iron. The District Surveyor has special powers as to the strengths and support of breast-summers, but none over their protection from fire. Again, when an iron or concrete floor is used, there is nothing in the Act to prevent the lower flanges of the joists being exposed, as they very frequently are, to the action of the fire, and that although it is common knowledge that such neglect will cause the failure of the floor.

A very important and almost entirely neglected subject is the internal construction of warehouse buildings. I had the opportunity of inspecting the ruins of Cripplegate after the fire, and was much impressed with the state of affairs that allows warehouse buildings to be constructed almost entirely with inflammable materials. The party walls in many cases remained standing entirely alone, the whole of the interiors, consisting of wooden floors, partitions and roofs, the walls and ceilings lined with matchlining, had disappeared. This fire destroyed property to the value of 1,250,000*l.*, and yet the district surveyor is powerless to prevent the erection and re-erection of warehouses constructed in this manner.

All warehouse buildings, except perhaps the very smallest, should be constructed with fire-resisting floors and roof, including all flats over the rear of lower stories at the bottom of light wells. The staircases should be fire-resisting, and enclosed by brick or similar walls carried up to the fire-resisting roof, and should be as far as possible shut off from the rest of the building.

Matchlining, particularly in warehouses, should be most severely regulated. It was proposed in the Amendment Bill, now withdrawn for this year, to require that all wooden boarding and panelling should be fixed close to the wall or floor without any intervening space; this would, I think, be impracticable, in addition to being useless; on contact with fire the boarding would warp and curl away from the wall, forming the very cavity it was proposed to prohibit. There can be no doubt that hidden spaces behind boarding or plastering are calculated to induce the spread of fire to an alarming extent; but that danger can, I think, best be met by limiting the risk to the one room; we should then have a real security instead of the false idea that would be created by the prohibition of space behind the boarding.

In a warehouse or shop premises no matchlining should be allowed to walls or ceilings unless the floors above and below the room, and all the walls of the room in which the matchlining is fixed, are fire-resisting, and no space more than is necessary for the necessary battens should be left behind the boarding. There is not the same risk of fire in dwellings as in warehouses, so that the regulation of boarding need not in dwellings be so severe, and care should be taken in framing any regulation not to prohibit a reasonable amount of wooden panelling in dados, window-backs &c.; but matchlined ceilings should be prohibited in dwellings as entirely unnecessary and dangerous.

The "lath and plaster" partition is another form of construction that requires regulation: I have seen many hundreds of houses constructed with the whole of the internal partitions, floors and roofs of timber, lathed and plastered; such a building could offer no resistance to fire, which, when once behind

the plaster face of a partition, would spread immediately to the whole house through the flues provided between the studs. In some of the provincial by-laws this is partially dealt with, by requiring the space between each ceiling and the floor above to be filled in with brickwork at each partition; in other districts the whole partition has to be filled in with brick.

The lath and plaster partition should be discouraged as much as possible by requiring a brick wall or half-brick partition wherever support for such is available; this will always be the case on the lowest floor, and very frequently in other situations; though, of course, half-brick partitions are not to be encouraged for more than one story in height. Where stud partitions become necessary, the plastering should be required to be carried down to the floor behind the skirting, and the stories should be bricked off from each other as required by the provincial by-laws.

Lift shafts have nowhere been dealt with in the Act; an attempt to supply this omission was made in the now withdrawn Bill, and the suggested requirements were on the whole satisfactory. The shaft, if enclosed, should be enclosed with fire-resisting material capable of sustaining a severe test, as the shaft, in the case of fire, not infrequently becomes a furnace shaft; this enclosure should be carried through the roof or at least covered down with a fire-resisting ceiling. The Montreal regulations of this subject are well worth consideration, and might well be adopted for London.

In any amendment of the London law, steel frame buildings should be dealt with, as they undoubtedly will come into use in the near future; they are not prohibited by the present Act, provided the walls be of the schedule thicknesses, but there are no provisions for stability of construction nor the protection of the steel from the action of fire. These buildings could, in my opinion, be dealt with under section 82, as buildings to which the general provisions of the Act are inappropriate, and be specially licensed by the County Council, but I believe that body does not take the same view.

Wooden Structures.—No notes upon the fire sections of the Act would be complete without reference to the question of wooden structures. These are dealt with in Section 84, which requires a licence to be obtained from the County Council before any wooden structure may be erected; this power of licensing has been transferred by the London Government Act, 1899, to the Borough Councils created in name by that Act. It is difficult to imagine what can have been the object of the authors of that Act in effecting that transfer, which is certainly one of the most ignorant and meddlesome pieces of legislation ever perpetrated, and has caused nothing but trouble and annoyance to all concerned, without any compensating advantage. The County Council retain the power under Section 82 to licence iron buildings and structures and any other building or structure to which the general provisions of Part VI. are inapplicable or inappropriate; this section would therefore appear to cover wooden structures, and so render Section 84 redundant.

It is significant that whereas Section 82 mentions buildings and structures, Section 84 makes no mention of buildings, but refers only to wooden structures: it therefore becomes necessary, now that the licensing under these two sections is in different hands, to draw a hard and fast line between a building and a structure; a building cannot be licensed under Section 84 as a wooden structure. This does not seem to be recognised by many of the Borough Councils, who claim to be able to license any erection they please as a wooden structure, and have on several occasions illegally issued such licences; indeed, the question has become so serious that the County Council have been obliged to take proceedings against a firm for the erection of a wooden building without a licence under Section 82. In this case the defendant had applied to the County Council for a licence for a building covered with corrugated iron, but had been refused, as the building was to contain a furnace and was to be constructed of wooden framing. The defendant thereupon omitted his iron covering, substituting wooden boarding and tarred felt, and applied to the Borough Council for a licence for a wooden structure, which was granted; and the building was erected without notice to the District Surveyor. On the case coming before a magistrate he decided that it was a building for which the licence of the County Council was necessary, and convicted the defendant, and ordered the demolition of the building.

This improper licensing, besides being a great annoyance to the person who is called upon to remove the irregular building, is of great danger from the fire point of view. The question of the regulation of wooden buildings and structures has always been one of great difficulty; there are many old erections that cannot be touched by reason of their age; again, many are undoubtedly constantly being put up in backyards and similar places out of sight, and it is only by chance that they are discovered and proceedings taken. The law on this subject needs strengthening, whereas the transfer of the licensing power has distinctly weakened it. These wooden erections are a real danger to the public; the licensing power must be returned to the County Council, and an enactment should be passed similar to that now existing for sky signs, requiring the entire removal of all objectionable buildings and structures, old and new, within a short time, and the periodical licensing of the remainder for two years at most at each time, the District Surveyor being required to report on each structure at each renewal as in the case of sky signs, now happily obsolete in London.

Provisions for Exit in Case of Fire.—The important question of exit in case of fire has hitherto been most imperfectly dealt with in the past and present Building Acts; in fact, until the passing of the Act of 1894, it had all but been ignored. The only class of building dealt with in that Act in any way adequately is one division of public buildings, viz., places of public resort. Section 80 provides a fairly good set of rules for churches, chapels, public halls, and similar buildings, giving minimum widths according to the number of persons to be accommodated, and requiring separate exits for each floor or gallery with all doors to open outwards. The weak point of this section is that a single exit for each portion of the building is all that is required, a second exit being only necessary where the width of the exits are reduced to two-thirds of the minimum. In my opinion, at least two exits should be required to all parts accommodating more than about 100 persons. Of course, theatres, concert halls, and all premises licensed for music and dancing, are also dealt with under the London County Council regulations made under the Act of 1878, and these require two exits in every case; but this still leaves all other buildings with only one exit compulsory.

The stairs, corridors, passages, and landings of all public buildings are required to be constructed of, and supported on, fire-resisting materials; but beyond that there are no provisions for the number, size, or situation of staircases and exits from such public buildings as hotels, hospitals, schools or asylums.

Buildings exceeding 60 ft. in height (this will probably include public buildings) must be provided "with such means of escape in case of fire from the stories more than 60 ft. above the street as can reasonably be required under the circumstances of the case," and the County Council's certificate that this has been complied with must be obtained before the upper portion of the building can be occupied. This form of legislation is most unsatisfactory; it places the person about to build either under the arbitrary rule of an official of the Council (perhaps a subordinate), or subject to the whims and fads of a committee of men probably not technically versed in the subject. Every architect about to design a building has a right to know what the law requires of him, and the provisions should therefore be set out definitely in the Act, and be enforced by the District Surveyor. This section is an importation into the London law of the objectionable provincial system, and it is to be noted that there is no appeal from a decision of the Council. A section in the Act requiring a fire-resisting staircase on fire-resisting supports, and enclosed with fire-resisting walls, and also a second way of escape by means of the roof to an adjoining house, or by an external iron staircase or bridge to some other building or to the ground would, I think, meet the case.

The provisions as to staircases and exits from tenement buildings or flats are most inadequate; unless these buildings exceed 125,000 cubic feet there is no provision whatever, and for buildings exceeding that cube the only requirement is that the stairs and corridors shall be fire-resisting. A building containing hundreds of tenements may be constructed with only one staircase. I have already suggested that these buildings should be limited in size; each of these subdivisions should have its separate staircase and exit to the outer air on the ground level.

The only provision for exit from ordinary dwellings is that if exceeding 30 ft. in height and having a roof parapet, there shall be a trap door or dormer by means of which access can be obtained to the roof. This may be no exit at all where the adjoining roofs are inaccessible.

It was the intention of the framers of the 1894 Act that all buildings exceeding 10 squares in area, used partly for trade and partly for dwelling should, in addition to the fire-resisting separation, be provided with a means of escape from the dwelling; unfortunately the text of the Act does not properly carry out that intention, as such a provision is only inferentially required by the section. The means of approach to the dwelling portion referred to will naturally form part of the dwelling division, and as such must be separated from the trade portion; this will entail an approach from the outer air, but not necessarily from the street. An attempt was made in the case of Carritt *v.* Godson (63 J. P. 644) to enforce an exit to the street; this of necessity failed, and I cannot help thinking that this case was very unwisely taken into court, unless indeed it was the intention to at once amend the Act in case of an adverse decision. The remark made by Mr. Justice Day that with an exit into a backyard you might get scorched, but not necessarily burnt, and that the object of the section would thus be partly obtained, "which is always something to be thankful for," is certainly quaint.

The section of the Act prohibiting buildings being erected or extended beyond the general line of buildings has been indirectly productive of death traps. Where consent is given the building in advance of the line is in all cases limited to 16 ft. in height, but no attention is paid to the exits from the building. A tall building some 50 ft. back from the road, shut in entirely behind a one-story shop, is quite inaccessible by a fire escape, and the natural exit may be entirely shut off by reason of the shop being in flames. Should the building exceed 10 squares in area the imperfect provisions of Section 74 would apply, but they would be practically useless, as has many times been demonstrated when a fire occurs in a building of this construction. Unless there be an adequate exit into a side or back street, a proper exit 3 ft. wide separated from the shop by a fire-resisting partition should be required to the front street. The roof or flat over all shops projecting more than 3 ft. from the main wall of the building should be required to be entirely of fire-resisting construction, and no skylight should be allowed within 6 ft. of the main building; at present the skylight is usually placed immediately under the windows of the first floor, so that in case of fire these windows become impossible as emergency exits. New legislation is not in all cases required to effect this imperative improvement; the County Council have this matter entirely in their hands in the case of each new application, as they have by Section 26 power to impose any condition they may deem expedient in the public interests.

The exits from factories are dealt with under the Factory and Workshops Act, 1901, Section 14: Every factory must be furnished with the certificate of the County Council, that it is provided with such means of escape in case of fire as can reasonably be required under the circumstances of each case. This form of legislation is bad in principle for the same reasons as in the case of buildings more than 60 ft. high, where a similar enactment is contained in the Building Act; but after many years of worry and friction the Council have now issued (July, 1902) a list of general requirements for the public guidance, which are in many respects admirable.

The Factory Act applies to the whole of the kingdom, and has, therefore, been drawn on the provincial principle that the local authority enforces the building by-laws; it is, therefore, somewhat out of key with the London law, where the District Surveyor has the administration. This has evidently not been entirely overlooked, as in the part dealing with the application of the Act to London power is given to the County Council (Section 153 (7)) to make by-laws under Section 164 of the London Building Act, with respect to the means of escape from fire in factories and

workshops; when made these by-laws will be by-laws under the Building Act, and as such will be administered by the District Surveyor. The provisions of the Factory Act do not apply to warehouses, nor to any buildings except factories so defined under that Act; nor are there any provisions on that subject in the Building Act, except the trap-door to roof required where the building exceeds 30 ft. in height and the roof has a parapet.

Exemptions—The exemption sections of the Act require careful revision; circumstances have very considerably altered since these exemptions were originally allowed. It is evident that a building situated some distance from adjoining buildings that might reasonably be exempted from provisions aimed at preventing the spread of fire from building to building is not necessarily one that should be exempted from provisions regulating the construction of the building to secure prevention from fire or exit in case of fire. Speaking generally, exemptions of particular buildings or buildings in particular ownership are not justifiable; if provisions are necessary in the public interest, all should be subject to those provisions; exemptions should therefore be reduced to a minimum. It is impossible to justify, except by favouritism, the exemption of such buildings as the Mansion House, Guildhall, Bank of England, the Sessions Houses, Covent Garden Market, Deptford Cattle Market, or the buildings of the Inns of Court.

The exemption of dwelling-houses of less than stated sizes, and exceeding certain distances from adjoining property, are no longer tenable, as many of the provisions of the Act concern the construction of and exit from the building, and not merely its protection from neighbouring buildings. Another class of exemption that needs careful reconsideration is the exemption of the railway, dock, and gas companies; it was intended that the exemption should only extend to buildings used exclusively for the company for its own use, but the operation of the exemption has been considerably extended by the decision of the Divisional Court in the case of Elliott *v.* L.C.C. (63 J.P. 645), which allowed the exemption of a wooden building erected by a firm of coal merchants on the premises of the railway company, and used as an office in connexion with the sale of coal by the firm, the coal being carried by the railway company; this was held to be "used for the purposes of or in connection with the traffic of a railway company." In this case the object of the section was not even partly obtained, so there is nothing to be thankful for. The time has, I think, gone by for allowing a railway or any other company to cover large areas with inflammable buildings; the only argument in favour of the exemption of railway companies is that the control is in the hands of responsible engineers; but this does not prevent the erection of inflammable buildings even contiguous to dwelling-houses. There are some very extensive office buildings erected by railway companies entirely of wood; surely the hundreds of clerks are entitled to the protection of the Building Act.

I now come to the burning question (in more senses than one), whether the provisions of the Act, or any of them, should be made applicable to existing buildings. As the law at present stands, the London Building Act controls the construction of only newly erected buildings, and alterations, additions, and other works done to existing buildings on the initiative of the owner of those buildings; there is no provision for the compulsory alteration of existing buildings to bring them more up to date. This is a very serious subject. The owners naturally look upon any attempt to amend their buildings as an interference with the rights of the individual, and the Act rather supports this view, containing as it does, many provisions for the maintenance of vested interests, even in the erection of new buildings on the site of old. But there is a vast difference between relaxing the rules of the Act when the width of a street is involved and when the lives and health of persons are at stake. Vested interests in property are one thing, but no man has a right to a vested interest in endangering the lives of his fellow men, even though they be his employees. The right of the authorities to interfere and demand structural alteration when the lives of others are endangered has for many years been recognised in various Acts. The Building Act itself, in Part IX., provides excellent machinery for the demolition or amendment of buildings in a dangerous condition. The Metropolis Management and Building Act, 1878, provides not only for the safety of the public in new theatres and other licensed places of assembly, but also gives the County Council power "where special danger from fire may result to the public," to cause structural amendments to be made to remedy the evil. The Factory and Workshop Act, 1901 (following on the repealed Act of 1891), in Section 14, provides for the safe exit of persons employed in a factory erected before as well as after 1891; the Authority (in London, the County Council) having the same power in old buildings as in new. The Public Health Acts provide for the abatement of nuisances in all buildings, old and new.

There is, therefore, plenty of precedents for applying to existing buildings such provisions as are required for new, for the safety of life, limb, and health. The number of new buildings is very small compared to that of existing buildings; by applying, therefore, these provisions to new buildings only we are making very slow progress; and we cannot, I think, logically go on enforcing the law as to new buildings without requiring some amendment of the numerous death-traps that exist. The owner of a factory may be required to provide proper exits for those employed in it, but should he discontinue the manufacture of goods and merely store or sell them, the building is then a warehouse, and as such the exits, no matter how dangerous, cannot be interfered with.

A reasonable amount of control of existing buildings has, I think, been shown by recent fires to be necessary. But while there is a precedent for the compulsory alteration of existing buildings, there is, as far as I know, no precedent for allowing repeated interference with the same building for the same defect: the power must be exercised once for all. That is the principle of law laid down by Mr. Justice Channell in the case of St. James's Hall Co. *v.* L. C. C. (84 L.T. 568). In this case the late Metropolitan Board of Works had in 1885 exercised their right under the Metropolis Management and Building Amendment Act, 1878, in respect of the St. James's Hall, to which they had required certain amendments, which had been carried out. Subsequently the L. C. C. sought to again exercise their authority and made a further requisition, but the Court held that this could not be enforced, as the Metropolitan Board of Works had already exhausted the power to demand amendment. I think, therefore, that it must be accepted that any power conferred on the authority (whoever that may be), to require the amendment under the Building Act of any existing building, must be exercised once for all: this, unfortunately, was not the proposal of the L. C. C. in the Bill of this year, now withdrawn.

The Glasgow Building Regulations Act 1900, while making provisions for the compulsory alterations to existing buildings, so far as regards the exits from warehouses and high buildings, recognises this principle, and requires the work to be done within five years of the passing of the Act (July 30, 1900). The question as to who shall exercise the power of demanding and enforcing these alterations is a very important one; it must clearly be in the hands of an authority that would exercise a uniform control over the whole of London: it will therefore be impossible to parcel it out to different authorities acting over confined areas, and it would, I think, be throwing too much personal responsibility on the District Surveyors to ask them to undertake the task. Similar duties are already exercised by the L.C.C. in the case of dangerous structures and the theatres and the Factory Act; they are also the present authority for special consents under the Building Act; and in addition the area of their administration is coterminous with that of the Building Act. There can, I think, be no two opinions that they are the proper authority to exercise this power, subject to the right of the owner to appeal to the Tribunal of Appeal.

The present dangerous structure procedure would form a good model for these cases. The District Surveyor might be asked to report upon the building. Acting upon his report, the L.C.C. might formulate their requisition, and the owner might have, say, one month in which to appeal to the tribunal, who might, if necessary, revise or cancel the requisition. When the work to be done has finally been decided upon, copies of the drawings and requisition should be sent to the District Surveyor to see the work carried out, and on completion he should issue a certificate to the Council and the owner that the work had been completed, which certificate should be a guarantee that the owner will not be required to further amend the building unless he should himself voluntarily make additions or alterations to it, in which case the rules for new buildings will, of course, apply.

It has been urged in the City that the Court of Common Council should administer the proposed law within the City; but this cannot be accepted, as the very persons on whom the notices would fall would, in many cases, be members of the authority to enforce those notices; no man would make a rod for his own back; again, this would destroy the necessary uniformity of administration throughout London. The time has, I think, passed for making any exception in favour of the City; those made in the past have been the outcome of petty jealousy, and exist to the detriment of good building and sanitation.

Suggested new sections to carry into effect some of the amendments of the law suggested:—

Separation of Buildings (in substitution for Section 74 [1]).

1. Every building shall be separated from each of the adjoining buildings by external or party walls, or by party arches or party floors.

2. If any building exceeding ten squares in area be divided into two or more tenements, each having a separate entrance and staircase, or a separate entrance from the outer air, every such tenement shall be deemed a separate building, and shall be separated accordingly.

Separation of Tenements within a Building (in substitution for Section 74 [3] and 68).

1. In every building exceeding 100,000 ft. in cubical extent separate sets of dwelling-rooms, tenanted or constructed or adapted to be tenanted in different occupations, shall be separated from each other by walls, partitions, and floors constructed of fire-resisting materials; and from the common staircase or other approach by walls constructed of brick, stone, or other hard and incombustible substances of the thickness prescribed for cross walls; and the floors of the common corridor and passages, and also the landings and stairs of the common staircase approaching thereto, shall be constructed of, and be carried on supports of, fire-resisting materials.

No such building shall extend to more than 250,000 cubit ft., unless divided by party walls in such manner that no division thereof shall extend to more than 250,000 cubic ft., and each such division shall be provided with a separate staircase and entrance affording a direct means of approach from each set of dwelling-rooms in that division to a street or public open space.

2. In every building exceeding 100,000 cubic ft. in cubical extent containing separate sets of offices or rooms (other than dwellings) tenanted or constructed or adapted to be tenanted by different persons, the floors and the principal staircases and corridors shall be constructed of and carried on supports of fire-resisting materials, and the walls of such staircases shall be of the thickness required for cross walls.

No such building shall extend to more than 250,000 cubic ft., unless divided by party walls in such manner that no division thereof shall extend to more than 250,000 cubic ft., and each division shall be provided with a separate staircase and entrance affording a direct means of approach to a street or public open space.

Separation of Trade Premises from Dwelling-rooms (in substitution for Section 74 [2]).

"1. Every building exceeding 10 squares in area and used or constructed or intended to be used jointly for the purposes of manufacture or trade (whether wholesale or retail) and for dwelling, shall be structurally divided into a part or parts to be used for the purpose of manufacture or trade, and a part or parts to be used for dwelling.

2. The part or parts to be used for the purposes of manufacture or trade shall be separated from the part or parts to be used for dwelling, by walls and floors constructed of fire-resisting materials, and all such walls shall be at least 4 in. in thickness; or if more than 10 ft. in height and not built in cement, at least 8½ in. in thickness.

3. All openings made in the walls and floors of fire-resisting materials shall be closed by doors and frames of fire-resisting materials bedded solid to the wall or floor.

4. There shall be provided to the part or parts to be used for dwelling, a separate means of approach from a street or from an open space, from which reasonable access can be obtained to a street, and all staircases and passages forming such means of approach shall be included within the part or parts to be used for dwelling and shall be constructed throughout of fire-resisting materials.

5. Where the building extends to more than fifty squares in area, two such means of approach shall be provided separate and distinct from each other.

(*Continued on page 74.*)

Illustrations.

SCULPTURE AT THE ROYAL ACADEMY.

WE give this week three further illustrations of this year's sculpture at the Royal Academy; Mr. H. Pegram's "Monument" in marble bas-relief; "Prayer," a marble relief by Mr. A. Bertram Pegram; and "Girlhood," a bronze bust by the same sculptor.

HULL TOWN HALL COMPETITION.

WE give this week illustrations of the design by Messrs. Treadwell & Martin, which received the second premium in the Hull Town Hall competition. The architects send us the following notes in regard to their intentions in the design:—

"The existing buildings have been retained, as we are of opinion that it would be impossible to include the whole accommodation in an entirely new building for the sum mentioned; for the same reason the necessary alterations in the existing building have been as slight as possible, the Mayor's apartments and banqueting-room remaining unaltered. The general arrangement of the plans is as follows:—

On the first floor the large hall is placed centrally with the Alfred Gelder-street frontage communicating with the courts and council corridors. It is approached by a spacious hall on the ground floor, with ladies' and gentlemen's cloak-rooms and lavatories in retired positions near the foot of the staircase, which leads to a large top-lighted crush hall giving direct access to large hall. Retiring rooms with lifts communicating direct with the kitchens are provided. The luncheon rooms are also so placed as to form convenient supper rooms in the event of a ball. Ample emergency stairs are provided at each end of the hall giving direct access to the street.

The Council Chamber is situated at the head of the existing staircase in the old building, extended to meet the new conditions, and is approached from it by a spacious council lobby. To the left and right of this lobby are the council corridors, with the council chamber placed centrally. The committee rooms are in front, *en suite*, and the members' rooms are at the back. The Council corridor gives direct communication, on the same level, between the Mayor's apartments and banqueting-room and council chamber and large hall.

The Law Courts are placed in the middle of the building on the first floor, in order to keep them as free from noise as possible, and are approached from Alfred Gelder-street by a grand double staircase leading direct to the law-courts corridor, giving access to the floor of the courts and the various witnesses' rooms.

From Anne-street a staircase leads direct to a private corridor on the level of the bench, from which are entered the various private rooms of magistrate, recorder, and judge, which again open immediately upon the bench. The grand jury room and justices' rooms are so arranged that they may conveniently be used as committee-rooms in connexion with council chamber.

The prison van entrance is from Anne-street, and leads direct to a police area, around which are arranged in two tiers the twenty cells required for police and sessions courts respectively. The dock in each case is reached by a staircase direct from the cells beneath, which are so arranged that the police cells may be used in conjunction with those for the sessions court, and means are provided for completely shutting these off.

On the ground floor are arranged the public offices, the City Engineer with a suite of offices with north light to Anne-street, and the City Architect in a similar position on a mezzanine over.

The Rates office is placed beneath the council chamber, with the treasurer's offices immediately adjoining, with entrances direct from Alfred Gelder-street, and from corridors leading to the other parts of the building. The pay office has also doors direct to Gelder-street and main corridor.

The elevations are treated in a free Renaissance manner, carrying on the main lines of the existing buildings.

Bearing in mind the small amount of money to be expended on the building, the elevations have been treated in a simple manner with no unnecessary domes or towers, as we felt that it would be quite impossible to introduce these for the amount laid down in the conditions."

NORFOLK AND SUFFOLK YACHT-CLUB HOUSE, LOWESTOFT.

IN the case of the Royal Norfolk and Suffolk Yacht-club house at Lowestoft, which has just been opened, the architects had what was practically a triangular site to deal with, hence the only plan that quite adapts itself to the site has to be triangular too. The base of this triangle faces the Yacht Basin, whilst the apex of it, carried up in the form of a dwarf tower look-out, or belvedere, is seen conspicuously from the two main lines of approach, viz., the Bridge and the Esplanade. The tower forms a square on plan, and the square is set diagonally towards the sea front. This arrangement allows two wings to be thrown out, one of which is the dining-room with the billiard-room over it, and the other the reading-room with the cardroom over it. The tower itself forms internally the central hall and takes the staircase, the steward's office, and the other offices generally.

The walling, externally, is finished with rough stucco, coloured cream white. The roofs are covered with bright red tiles. The woodwork generally is painted white, except the doors and the balcony, which are painted a bright green. There are windows, balustradings, copings, and carved panels in red terra-cotta brickwork introduced in various parts of the building. The belvedere is of woodwork painted white, surmounted by a copper dome, above which a copper "ship" gilded acts as weather-vane. In order to complete the design, grass will eventually be laid all around the building, and straight gravel paths will be formed.

The plans of ground and first floor, which are appended, show the general arrangement of the building. Over the second floor is the tankroom, and over that the belvedere, which forms the conspicuous feature on the land side of the tower. From this belvedere there are steps out on to the tower terrace. Telephones have been laid into different parts of the building, so as to avoid needless running about of waiters, &c.

The general contractors for the work have been Messrs. J. Youngs & Son, of Norwich. Messrs. Johnson, Burton, & Theobald, of Norwich, have done the hot-water and heating works; they have also installed the telephones and supplied the stoves. Messrs. G. N. C. Mann & Co. have installed the electric light and supplied the fittings. Mr. Minns, of Norwich, has done the carved brickwork. The linoleum, curtains, blinds, &c, have been supplied by Messrs. Chamberlins, Ltd., and most of the furniture has been the workmanship of Messrs. Trevor, Page, & Co. The lead glazing is from designs prepared by the architects, and executed by Messrs. Watson & Kirby, of Norwich. The whole of the works have been carried out from the designs and under the superintendence of the architects, Messrs. George J. Skipper & F. W. Skipper, of Norwich, whose designs were originally selected in competition.

DESIGNS FOR LODGE AND BOAT-HOUSE.

THE lodge was proposed to be built at the entrance of Neasden House. The walls were to be built of uncoursed random rubble, and the roof covered with stone tiles. The window frames and sashes were to be of oak.

The boathouse was designed for the lake at Neasden House, and has floating accommodation for a skiff, punt, and sailing dinghy, also several canoes; and two skiffs can be hung from tackle attached to the floor joists. A special sail and tackle room is arranged in a long and narrow room on the right hand side of the boat entrance. The land entrance is at the back, and ladies' and gentlemen's dressing-rooms and dining-room open out of a small hall.

The kitchen has its own entrance, and leads through a servery to the dining-room. Entrance is obtained to the boat-house below by a staircase in the hall, and from the balcony another staircase leads on to the landing-stage. Direct access is also obtained for the watermen from the road to the landing-stage.

The lower portion of the building is composed of red brick and stone; the upper portion is formed of oak framing with lath and plaster between. The roofs are covered with sandy red tiles. The balcony is of oak supported on strong oak brackets.

R. MORPHEW.

THE INTERNATIONAL FIRE PREVENTION CONGRESS.

(*Continued from page 73*)

6. All buildings used or to be used wholly or in part for the purposes of manufacture or trade, whether wholesale or retail, shall so far as regards the part used for the purposes of manufacture or trade, be subject to the provisions of the Act of 1894, and any amendment relating to the cubical extent of buildings of the warehouse class.

Width of Way (*in substitution for section* 13 [5] *first proviso and amendment* 1898.

Provided always that no dwelling to be inhabited or adapted to be inhabited by persons of the working class, shall, without the consent of the Council, be erected or re-erected within a distance of 20 ft. from the centre of the roadway, so that the height of the ceiling of the topmost story above the footway shall exceed 20 ft. more than the distance of the front or nearest external wall of such building from the opposite side of such street; and that no building or structure shall be converted into such dwelling-house so as to exceed such height.

Uniting Buildings (*in substitution for Section* 77 [1] *b*).

Such opening shall have the floor, jambs, and head formed of brick, stone, or iron, or other fire-resisting and non-combustible material, and shall be closed by a pair of party wall doors at a distance from each other of the full thickness of the wall. Such party wall doors shall be of iron at least ¼ in. thick in the panel, and be either hung on pivots and fitted close to rebated iron frames, and secured by bolts or other fastenings at the top, middle, and bottom of each style, or sliding doors or shutters fitted close at all edges into grooved or rebated iron frames; and such party wall doors shall be constructed and fitted in all respects to the satisfaction of the District Surveyor.

Provided that the Council may by by-laws or otherwise, after consulting with the District Surveyors' Association, approve the use as party wall doors of doors of fire-resisting material otherwise constructed.

(*Additional to Section* 77 [1] *c*.—Provided that the Council shall have power where they think fit to allow such opening to be constructed of a width not exceeding 9 ft.

(*Additional to Section* 77).—Where any opening or openings have at any time been made in any party wall or in two external walls dividing buildings, the making of any subsequent opening in such party-wall or two external walls, shall, notwithstanding, be deemed to be a uniting of buildings, and no such subsequent opening shall be made except in accordance with the provisions of the principal Act or any amending Act to the uniting of buildings.

Additional.—"Where, before the passing of this Act, any openings have been made in any party-wall or in two external walls dividing buildings, the owner or occupier of such buildings shall within six months of the commencement of this Act make application to the District Surveyor for a certificate as to such openings. Every such application shall state the situation, area, height, number of stories, use of each building, and the name and address of each occupier and tenant, with particulars as to their occupation and such other information as the District Surveyor may reasonably require. On receipt of such application the District Surveyor shall make a survey of the buildings, and if the openings be found to be in accordance with the Act he shall issue a certificate to that effect; but if the openings be found to be in any way irregular, he shall cause the same to be amended or built up, as the circumstances may require.

In the case of openings constructed after the passing of this Act the District Surveyor shall issue his certificate on completion of the opening.

The certificate shall run for two years from the date thereof, and at the expiration of that time application shall be made by the owner or occupier for the renewal, when the same provisions shall apply.

Any person who neglects to make application to the District Surveyor for his certificate as aforesaid shall be liable to a penalty not exceeding 5*l*., and the District Surveyor may take all proceedings as though application had been made.

Any person who makes an opening in a party-wall, or in two external walls dividing buildings, without giving notice to the District Surveyor, shall, in addition to the penalty for neglecting to give building notice, be liable to a penalty of not exceeding 20*l*.

Additional.—Where a party-wall separates buildings of different heights and in different occupations, such wall shall be deemed a party-wall for

the full height of the higher building, and no opening shall be made in any portion of the wall except in accordance with the provisions of the Act of 1894 and any amending Act as to the uniting of buildings, or as provided in Section 101 of the Act of 1894.

Limit of Cubical Extent of Trade Premises (in substitution for Section 75, first two paragraphs).

No building of the warehouse class or other building used or to be used either wholly or in part for the purposes of manufacture or trade, the floors of which are not constructed of fire-resisting materials, shall extend to more than 100,000 cubic feet, unless divided by party walls in such manner that no division thereof extends to more than 100,000 cubic feet. Provided that where the floors of such building are constructed of fire-resisting material the building or division may extend to not more than 250,000 cubic feet.

No addition shall be made to any existing building exceeding the aforesaid limits of cubical extent, unless the building be altered to comply with this section; nor shall any addition be made to any building nor to any division thereof, so that the cubical extent of such building or division shall exceed the aforesaid limits.

Construction of Warehouse Buildings (Additional).

The following provisions shall (except with the consent of the Council) apply to buildings of the warehouse class and all other buildings used or to be used for the purposes of manufacture or trade.

1. The roofs, flats, and gutters of every such building and every turret, dormer, or other erection thereon shall be constructed solid of fire-resisting materials, except the necessary woodwork of doors and frames, windows and frames, skylights and lantern lights.

2. The external walls abutting upon any street or upon any court or light well connected with or adjoining to such building shall, where within a distance of 20 ft. from any other buildings opposite thereto, be carried up as a parapet at least 8½ in. thick for a height of 3 ft. above the roof, flat, or gutter. And all windows in such walls and any skylights or lantern lights lit from such street, court, or light well, shall be either fitted entirely with metal frames and glazed with wired glass, or be fitted with fire-resisting shutters capable of being closed and fastened from the inside.

3. In all such buildings exceeding ten squares in area, the principal staircases shall be constructed of and carried on supports of fire-resisting materials, and shall be enclosed with walls or partitions of fire resisting materials carried up to the roof, or where such staircase does not extend to the top of the building, be covered in with a floor of fire-resisting materials. And the corridors and passages from such staircases communicating with the street shall be similarly constructed and enclosed.

Protection of Metal from Fire (Additional).

Every metal girder, stanchion, column, or story-post supporting a wall or a floor or partition, required by this Act to be of fire-resisting material, shall be protected from the action of fire by being encased to the satisfaction of the district surveyor, in concrete, brickwork, terracotta, or metal lathing, and plaster or cement, without woodwork of any description. Should any person be dissatisfied with the decision or requirements of the district surveyor he may appeal to the tribunal of appeal.

Wooden Boarding and Panelling (Additional).

1. No wooden boarding or panelling shall be fixed as a lining to walls, partitions, ceilings, or soffits, in any building of the warehouse class, nor in any other building used or to be used for the purpose of manufacture or trade, nor in any shop or room used in conjunction therewith, unless all the floors, ceilings, flats, soffits, walls, and partitions enclosing the room or other space in which such boarding is fixed to be constructed entirely of fire-resisting materials, or the spaces between the joists or studs be filled in solid with brick, concrete, or other fire-resisting materials, and there shall be no space between such wooden boarding or panelling and the wall partition, floor, ceiling, or soffit, to which it is affixed, other than the thickness not exceeding 1 in. of the battens necessary for fixing such boarding or panelling.

2. No wooden boarding or panelling shall be fixed as a lining to walls, partitions, ceilings, or soffits in any dwelling-house unless the floor, wall, or partition, or the ceiling or soffit (other than to a roof or flat over which there is no room) to which such boarding or panelling is affixed be constructed of fire-resisting materials, or the space between the joists or studs be filled in solid with brick, concrete, or other fire-resisting materials.

Internal Partitions and Walls (Additional).

1. All interior walls and partitions (other than partitions constructed of wooden boarding or panelling) shall, so far as regards the lowest story atleast of such wall or partition, where adequate support is available upon the solid ground or upon a brick wall, or upon a metal girder, be constructed of brick, stone, concrete, or other incombustible material.

2. The spaces inside any partition constructed of timber framing shall be filled in solid with brick, stone, concrete, or other incombustible material from the level of every ceiling up to the level of the top of the skirting of the story immediately above.

One-story Projecting Shops, &c. (Additional).

1. The roof or flat over any shop or other premises used for the purpose of manufacture or trade, projecting beyond the main front flank or rear wall of the building of which it forms part, and abutting upon a street or open space adjacent to a street, shall be constructed throughout of fire-resisting materials. And no skylight or lantern-light shall be placed on such roof or flat within 6 ft. of any such wall in which there are windows, but all such skylights and lantern-lights shall be so situated as to afford a clear gangway at least 4 ft. wide from such windows to the frontage abutting on the street or open space aforesaid.

2. There shall be provided to the stories above the ground story of such buildings a means of approach at least 3 ft. in width from a street or from an open space from which reasonable access can be obtained to a street, and where such means of approach passes through, along, or across the aforesaid projecting shop or premises used for manufacture or trade it shall be separated therefrom by walls, floors, and partitions of fire-resisting material, and shall be constructed of fire-resisting materials.

Exit from certain Buildings (in substitution for Sections 63 and 68).

In every public building, and in every building the upper surface of the top floor of which is more than 60 ft. above the level of the street, and in every building of the warehouse class and every other building used for the purpose of manufacture or trade, there shall be provided exits from the building by means of one or more staircases communicating with the various parts of such building, constructed throughout of fire-resisting material and carried upon supports of and enclosed by walls of fire-resisting material, and the floors of all lobbies, corridors, and passages communicating therewith shall be constructed of fire-resisting materials. There shall also be provided to such building an additional means of escape in case of fire either by a second staircase as aforesaid, or by an external iron staircase or bridge communicating with the ground or with some other building from which access can be obtained to the street, or by some other means that may be approved by the Council, or on appeal by the tribune of appeal; and the Council may make by-laws under Section 164 of the principal Act with respect to such additional exit.

Regulation of Exits of Existing Buildings (Additional).

1. In the case of any building erected before the passing of this Act that is either
   (*a*) A public building; or
   (*b*) A building, the upper surface of the top floor of which is more than 60 ft. above the level of the street; or
   (*c*) A building of the warehouse class or other building used for the purpose of manufacture or trade.

Where it is made known to the Council that the said building is so defective in its structure that special danger from fire by reason of the insufficiency or inadequacy of the means of exit may result to the persons dwelling or employed therein, or frequenting or resorting thereto, the Council shall require a survey of such building to be made by the District Surveyor.

2. The District Surveyor shall make known to the Council any information that he may receive with respect to any structure being in such state as aforesaid.

3. For the purposes of carrying this section into effect the Council may cause such inquiries to be made respecting each building as they may think fit.

4. It shall be lawful for the District Surveyor to enter into any building or upon any land upon which any building is situate, for the purpose of making a survey of such building.

5. Upon completion of his survey the District Surveyor shall report to the Council his opinion as to the condition of the building and the reasonable means to be adopted to remedy such deficiency or inadequacy of exits as aforesaid, if any.

6. If the certificate be to the effect that such deficiency or inadequacy exists the Council may cause a requisition to be served on the owner or occupier of the building requiring him to cause such works to be done as can reasonably be demanded under the circumstances of the case. Any person dissatisfied with the requisition of the Council may within twenty-one days of receipt of same appeal to the tribunal of appeal, who shall hear and determine such appeal and may affirm, alter, amend, or disallow such requisition.

7. At the expiration of the twenty-one days aforesaid should no appeal have been lodged or where such appeal has been lodged, then upon the decision of the Tribunal of Appeal a copy of all plans and particulars of any works approved or required by the Council under this Act shall be furnished by the Council to the district surveyor within whose district the building to which such plans and particulars relate is situate, and it shall be his duty to ascertain that the same is built in accordance with the said plans and particulars.

8. Upon the completion of the required works by the owner or occupier, the District Surveyor shall issue a certificate to the owner or occupier and to the Council that the works have been done in accordance with the requisition of the Council or of the Tribunal of Appeal as the case may be. After the issue of such certificate no further requisition shall be served by the Council in respect of the same building.

9. If the owner or occupier fail to comply as speedily as the nature of the case permits, the Council may cause a complaint to be made at a Petty Sessional Court, and the proceedings shall be in all respects, where the same are applicable, the same as in the case of dangerous structures.

[We are compelled, owing to the pressure on our space, to hold over the rest of our report of the Congress proceedings until next week.]

THE NATIONAL TRUST.

THE eighth Annual Report of the National Trust states that the Council is able to announce the acquisition of one new property, while the acquisition of others is hoped to be imminent.

An appeal was made in the closing months of 1902 for funds to purchase the summit of *The Kymin* at Monmouth. The purchase price was 300*l.*, and the Council appealed for 400*l.* in order that it might have a balance to meet the necessary initial expenditure as well as the cost of repairs and maintenance for the future. Before the end of the year the property had passed into the hands of the Trust, and about half of the balance asked for was received. The new acquisition contains about nine acres on the highest part of the hill, and commands a very extensive and beautiful view of the Wye and Monnow Valleys. The Kymin Round House was built there in 1794 by public subscription, great care being taken in its erection in order that each window should present a peculiarly wide and beautiful "natural picture." Six years later a temple was built in honour of the British Navy, which was visited in 1802 by Lord Nelson. From that time forward the place has been a well-known resort alike of visitors and natives. But latterly the temple has fallen out of repair. When the property was announced for sale last year, the Council was of opinion that it was a case in which the Trust should intervene and ensure its preservation for the use and enjoyment of coming generations.

The Council has voted from its general funds the balance needed to complete the purchase of the *Old Post Office* at Tintagel. In 1893 this most interesting fourteenth century house was put up to auction and bought by Miss Catherine Johns, who was anxious to ensure its preservation; it was at that time put into a state of thorough repair, and subsequently Miss Johns made an offer of the house to the National Trust on favourable terms. The Council is of opinion that its acquisition will be highly satisfactory, for it is by far the most interesting building in the neighbourhood.

Negotiations between the Council and Mr. W. H. C. Nation for the transfer of some 20 acres or so on the top of *Rockbeare Hill* (to be called, by the wish of the donor, "Prickly Pear Blossoms Park") are in an advanced state. Rockbeare Hill is a few miles east of Exeter, and the top of it commands a very fine view westward across the valley of the Exe to the heights of Dartmoor; while to the north, the view stretches up to Exmoor. The land is in part covered by a wood, and in part by open heath, such as is familiar to those who know the New Forest country, and which makes so beautiful a foreground to English landscape. This will be the first acquisition by the National Trust of land in the county of Devon.

In addition to its acquisition of properties, the Council has considered many cases in which danger has been thought to threaten some place or building of historic interest or natural beauty; and action has been taken where it seemed desirable.

Stonehenge still remains inclosed. Action with reference to the rights-of-way alleged to have been obstructed by Sir Edmund Antrobus has hitherto been postponed, both by the Wilts County Council and by the Open Space Socie-

ties, in the hope that the negotiations known to be pending for the transfer of the Monument to the Government would be successful. It has, however, lately been ascertained that these negotiations have come to an end, owing to the high sum asked by Sir Edmund. Under these circumstances, the Commons and Footpaths Preservation Society has dstermined not to delay longer in organising an effort to try the question of the validity of the inclosure. While the public are threatened with exclusion from Stonehenge, the most interesting historic remains in Ireland, those of the *Hill of Tara*, have been exposed to danger. During 1902 considerable damage was done to the hill, and it was much feared that a large portion of the historic remains was in grave jeopardy. The Hill contains the most interesting semi-historic monument in Ireland—perhaps in the United Kingdom.

The ownership of the hill is divided, and the leasehold of that portion on which the excavations were being carried out has just been sold, and the purchaser has expressed in a letter to the National Trust her intention of doing all in her power to protect from further disturbance this historic landmark.

In conjunction with the Society of Antiquaries and the Dartmoor Preservation Society, the National Trust has addressed a communication to the chief landowners and public authorities of the district with reference to the damage which is constantly being done to the pre-historic remains on Dartmoor. Dartmoor is peculiarly rich in the remains the Neolithic Age, as well as of those of more historic times, and perhaps for that reason less care is taken to ensure their protection than might be. Most of the damage is done in complete ignorance of their true value. Throughout the district it has long been the custom for individuals to remove such stones as might be required for domestic or agricultural purposes; while some, at least, of the damage is done under the powers given to the Highway Authorities by the Highway Act of 1835. It is hoped that the action of the societies may result in awakening the interest in Dartmoor's prehistoric and historic antiquities among those by whose influence and power they may be protected.

The Council has been appealed to by the Dorset Field Club with reference to the destruction of a very fine barrow at *Came*, near Dorchester. The damage was done for the sake of the flints, of which the barrow was composed, and which were used for road-making purposes, and it was feared that other barrows in the neighbourhood might meet with the same fate. The club felt strongly on the subject, but considered it to be a matter strictly outside its function, and so called the attention of the Trust to the danger. The trustee of the property was approached, and has very willingly given an assurance that no further damage shall be permitted.

While unable to take any very active part in the movement, the Council has expressed its approval of the scheme for the extension of the public open space at Hampstead Heath, and has supported the Hampstead Heath Society in urging the London County Council to secure for preservation the fields at North-end immediately adjacent to the projected station on the new Tube Railway from Charing Cross.

Members of the Trust will remember that the County Council of Oxfordshire recently decided to substitute new iron-girder bridges for the old bridges over the Thames at Sonning. The Thames had been robbed of many of its picturesque old bridges during the last few years, and the disappearance of the far-famed Sonning Bridges will cause a serious loss to the river scenery. The Council, however, was advised that the old bridges were not safe, and that the case was not one in which the Local Authorities ought to be opposed *in toto*. Representations were accordingly made by the National Trust as well as by other public bodies and private individuals, urging the County Council to erect a less obtrusively ugly bridge than that at first suggested. Unfortunately the Council has decided to persist in its original scheme.

In the course of last autumn a large portion of Snowdon came into the market, and the National Trust was publicly urged to take action to secure it as a national possession. The Council did not see its way to carry out such a scheme, but when the property, which formerly belonged to the late Sir Edward Watkin, Bart., failed to find a purchaser in the auction market the owner's representatives were approached with a view to the transfer of the summit of the mountain to the National Trust. The owner, however, was unwilling to negotiate on that basis.

The Council has been asked by the City Churches Preservation Society for an expression of opinion upon the proposed demolition of All Hallows, Lombard-street. Without discussing the economic conditions of the problem presented by the City churches, the Council regrets, from an æsthetic point of view, the proposal to remove another of Wren's City churches.

The Council has viewed with great distrust another railway Bill now before Parliament, by which power is sought to tunnel through the East Cliff at Hastings, in order to bring a line of railway to the harbour. If this line is made, the cuttings which will be necessary will damage to a deplorable degree the natural beauty of the East Cliff, whose grandeur has hitherto been the chief pride of Hastings. The Corporation of the town has decided to petition against the Bill; and many of the inhabitants of the town are fully alive to the danger, and realise the importance of preserving the natural features of the cliff, which forms so great an attraction to the best class of visitor. "The destruction of the hill," it has been said, "will be the destruction of Hastings."

The Council regrets that it has not been possible to make any progress in Parliament this session with the Land Dedication Bill, which has been drafted at the instance of the Council. It is convinced that the greater facilities afforded by the Bill for the preservation of interesting and beautiful places would be welcome to landowners and valuable to the nation.

The Council concludes its Report with an expression of regret at the loss it has sustained by the death of Mr. F. C. Penrose, who had represented the Royal Institute of British Architects in the Council since the formation of the Trust. The Council gladly welcomes Mr. G. F. Bodley, R.A., who has been nominated by the President of the Royal Institute to serve in the place of Mr. Penrose. The trustees of the British Museum have nominated Viscount Dillon and Sir Edward Poynter, P.R.A, to serve on the Council, while Professor Boulger has taken the place of Dr. Dudley Buxton as the nominee of the Selborne Society.

THE BUILDERS' BENEVOLENT INSTITUTION.

THE fifty-sixth annual general meeting of this Institution was held on Wednesday afternoon, at the offices, 31 and 32, Bedford-street, Strand, W.C., the President, Mr. William Higg, in the chair.

The minutes of the last meeting were read and confirmed, and the Annual Report was read and adopted. The Report stated that the past year had been a most trying one for most charities, and this Institution had felt the effects. There had been an appreciable falling-off in the annual subscriptions, but this, in a large measure, had been balanced by the successful results of the President's appeal at the last annual dinner, when contributions amounting to about 1,200*l.* were received. Several changes had been introduced in connection with the payment of annuities, by which the recipients had been spared every possible inconvenience in obtaining their monthly allowances, the anxiety of the President and Committee being that those who are unfortunate enough to need the assistance of the Institution might receive the same without trouble and expense. Since the last Report seven men and four women have been added to the Pensioners' List. Each application was most carefully investigated by a member of the Committee, all the eligible candidates were elected, thus saving a contested election. During the year three pensioners had died. There are now twenty-six men and thirty women receiving annual pensions of 39*l.* and 27*l.* respectfully. The Committee desired to place on record its deep obligation to the President, whose zealous attention to his Presidential duties, generosity to the Institution, and solicitude for the pensioners, had made him a benefactor indeed to the charity. The success attending the last annual dinner was owing to his personal efforts and influence, and to the cordial co-operation of his supporters. The Committee took the opportunity to thank the trustees (Sir Arthur Charles Lucas, Bart., Mr. F. J. Dove, Mr. T. F. Rider, Mr. J. Howard Colls, Mr. T. Stirling, and Mr. J. T. Bolding), the honorary auditors (Mr. J. T. Bolding and Mr. R. J. Ward), and the dinner stewards for their services to the Institution. The Committee had the pleasure to announce that Sir Weetman D. Pearson, Bart., M.P., had accepted the Presidency for the ensuing year. The annual dinner will be held in the Whitehall Rooms, Hotel Métropole, Charing Cross, on Thursday, November 26.

The audited accounts were then passed. The total cost of management has this year been 268*l.* 15s. 11d.—200*l.* less than the cost the year before; the annual subscriptions amounted to 540*l.* 14s.; the interest on invested capital was 802*l.* 3s. 10d., and the amount paid to pensioners was 1,657*l.*

It was agreed to make a record on the minutes of the Committee's satisfaction at the result of Mr. Costigan's first year of office as Secretary of the Institution.

Sir Weetman D. Pearson, Bart., M.P., was, on the motion of the Chairman, elected President for the ensuing year, and a vote of thanks to the retiring President, Mr. W. Higgs, was, on the motion of Mr. J. Howard Colls, heartily agreed to.

Mr. Colls was thanked for his services as hon. treasurer, and was re-elected, and the present Committee were re-elected with the addition of Mr. W. Higgs.

A vote of thanks was passed to the auditors, Mr. R. J. Ward, F.C.A., and Mr. J. Bolding, and these gentlemen were re-elected.

On the motion of Mr. C. Bussell, seconded by Mr. Colls, it was agreed, "That the pensions for males be increased from 3*l.* 5s. to 3*l.* 10s., and pensions for females from 2*l.* 5s. to 2*l.* 10s. per month."

The meeting then terminated.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday afternoon in the County Hall, Spring-gardens, Lord Monkswell, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend Battersea Borough Council 15,000*l.* for the erection of working-class dwellings, 2,336*l.* for street-lighting purposes, and 4,127*l.* for street improvements; Stepney Borough Council 12,400*l.* for street improvements and 2,790*l.* for electric lighting and street lighting; Wandsworth Borough Council 1,250*l.* for erection of river wall; Camberwell Borough Council 10,000*l.* for the erection of working-class dwellings; Poplar Borough Council 5,000*l.* for sewerage works; Hackney Union Guardians 17,000*l.* for poor law purposes; Kensington Guardians 2,500*l.* for similar purposes; and the School Board for London 12,370*l.* for improvements at industrial schools. Sanction was also given to the following loan:—Hackney Borough Council 6,500*l.* for electric lighting.

Jobbing Works: Schedule of Prices.—The General Purposes Committee reported as follows:—

"The standing orders of the Council provide that, in the case of jobbing works carried out by the Works Committee, the estimates, measurements, and certificates of the supervising officers shall be based upon schedules of prices agreed upon between the manager of works and the supervising officer concerned, and approved by the General Purposes Committee. The schedules of prices for jobbing works carried out under the direction of the engineer and the valuer have recently been revised, but the schedule at present in operation with regard to architectural jobbing works, which was based on that in use by the School Board for London, was adopted on February 26, 1895, when the Council decided to allow 12½ per cent. above the prices in the schedule, this percentage being arrived at after consideration of the percentages above schedule prices at which the School Board for London had let their contracts for jobbing works. In consequence of an advance of the rates of wages of various classes of artisans this percentage was on November 17, 1896, increased to 14½, and owing to a further increase in the rates of wages the Council on July 13, 1897, fixed the percentage at 16½, and this percentage is at present in operation.

Jobbing works may be divided into two groups, viz.:—

(*a*) 'Measured work,' *i.e.*, work the extent and nature of which can be accurately measured and valued according to the prices in the schedule.

(*b*) 'Day work' or 'time work,' *i.e.*, work the

nature and extent of which is either so trifling on the one hand, or so speculative on the other, as to make it impossible to give even an approximation of the probable cost; also work which has to be executed under circumstances so peculiar as to place it outside the range of the ordinary schedule rate for measured work, and work which it is found impossible to measure.

The schedule value of all jobbing works which the architect directs to be executed as 'day work' is calculated on the basis of the actual number of hours worked by the men and the actual quantities of materials used, at the prices for such time and materials as shown in the schedule, plus the adopted percentage. The rates of wages inserted in the schedule are those in force when the schedule was compiled in 1895, and in nearly all cases the rates now paid are in excess of those in the schedule. The architect and manager have agreed that in order to correct this anomaly all the labour rate items should be eliminated from the schedule, and that in the case of all accounts rendered for labour in jobbing works executed as day-work, the practice prevailing in Government departments of adding 15 per cent., in respect of establishment and general charges and profit, to the actual rates paid by contractors should be adopted. Such percentage is, however, not to be considered as covering the expense of a special foreman ordered by the architect for day-work of such a character as to require such services in addition to those of the district jobbing works foreman. The schedule value of materials used in connexion with day work will, of course, be calculated as indicated in recommendation (*b*) of this report. As, however, the percentage allowed above schedule prices was raised from 12½ to 16½ in consequence of increases in rates of wages, the architect and manager propose that if all labour rate items be omitted from the schedule, the peroentage to be added to the prices of all remaining items should be reduced to 13½, this figure being arrived at by adding 1 per cent. on account of the increased cost of materials to the 12½ per cent. adopted in 1895.

We concur in the proposals submitted above, the effect of the adoption of which briefly stated will be that in future accounts for architectural jobbing works the schedule value will be arrived at by adding (*a*) 13½ per cent. to the schedule price of all items in the schedule (from which all labour rate items will be eliminated), and (*b*) 15 per cent. to the actual wages paid on jobs executed as day-work. The Council of course understands that the 13½ per cent. is not added in the case of (*b*), and that the schedule value is used for purposes of comparison only, the actual cost being paid in all cases."

The Committeee recommended accordingly, and the recommendations were agreed to.

Tramway Traction.—The debate was resumed upon the Report by the Highways Committee on the subject of the electrification of the Council's northern tramways. At the previous meeting the portion of the Report recommending the conduit system for about twenty-six miles of tramways was agreed to. The remainder of the recommendations, now to be considered, were in favour of the overhead trolley system for about twenty-eight miles of tramways.

After a brief discussion this part of the Report was deferred in order to afford an opportunity for obtaining the definite views of the Borough Councils on the subject.

Open Spaces.—It was recommended by the Parks Committee that a sum of 3,670*l.* be voted for the laying out of Brickfield Gardens, Limehouse.

Mr. Beachcroft pointed out that it was proposed to erect a bandstand, gymnasium, conveniences, shelter, and watchbox on an open space of less than two acres. There must be some limit to their expenditure. No one begrudged small open spaces, but their cost was becoming too great. The up-keep of the parks and open spaces, which was 130,000*l.*, represented half the cost of the maintenance of the drainage system, and he considered they were going a little too far.

Mr. Campbell, while regretting the heavy cost, warmly supported the acquisition of open spaces in the East End of London.

The recommendation was agreed to.

It was also agreed :

"That the estimate of 818*l.* submitted by the Finance Committee, be approved; and that, subject to the necessary Parliamentary authority being obtained, the Council do agree to contribute one-half of the cost of acquiring Brunswick square as a public open space, such contribution not to exceed 818*l.*, and to be made conditionally upon the Council of the Metropolitan Borough of Camberwell undertaking to acquire, and to lay out and maintain, the land as a public open space. . . . .

That the estimate of 1,175*l.* submitted by the Finance Committee be approved; that an expenditure of that amount be authorised for laying out Nelson-square-garden, Blackfriars-road; and that the Parks Committee be authorised to invite tenders and enter into any necessary contracts in connection with the work. . . .

That the estimate of 4,650*l.* submitted by the Finance Committee be approved, and that the expenditure of that sum be authorised for the purchase of a portion of the Mountsfield estate having an area of about 5¾ acres for the purposes of a public open space, subject to the Lewisham Borough Council contributing a sum of 2,250*l.*, being one-half of the purchase money. . . .

Letting of Property by Public Auction.—The Corporate Property, Charities, and Endowments Committee reported as follows :—

"The Council on April 7 last sanctioned the submission of certain properties to public auction during the month of June, and for the purpose authorised an expenditure of 200*l.* For various reasons it was found impossible to hold an auction before July 13 next, and for this date a room at the Mart has been engaged. In the interval circumstances have necessitated some slight alterations being made in the list of properties to be submitted, with the result that the plots which we suggest should now be offered for letting are as follows :—

Commercial land : Holborn to Strand—Lots 4, 5, 6, and 7; Southampton-row—Lot 8; Mare-street, Hackney—Lots 1 to 15; Long-lane, Borough—Lots 1, 2, and 3; Tower Bridge southern approach—Lots 14, 15, 16, and 21.

Rehousing Sites : Tower Bridge-road southern approach; Clarence-street, Rotherhithe.

The commercial land will be offered upon lease for 80 years and otherwise in accordance with conditions approved by the Council, adapted in detail as circumstances necessitate. The rehousing sites are offered at a nominal rent of 1s. per annum upon lease for 99 years, intending lessees being asked to make offers of a premium for the lease, and required to submit plans for the approval of the Council and of the Home Secretary. In a previous Report we stated that we had been advised that, with a view to testing the value of these sites, it would be of little use to offer either other than upon lease for 999 years, which was equivalent to parting with the freehold. We accordingly recommended that the Clarence-street site shall be offered for letting for a term of 999 years, but the Council substituted 99 for 999. Having prepared the conditions we forwarded a copy to the Housing Committee for their observations, in the hope that the proposals set forth therein would receive their concurrence. After consultation with the valuer, the Housing Committee have expressed their inability to approve of the conditions on the ground that they will not in any way form a true test of the real housing value of the sites. The Housing Committee point out that the primary object of the Council in deciding that the sites should be submitted to public auction was that an effective test of the correctness of the officers' estimates should be obtained. We recommend—(*a*) That the course of action taken by the Corporate Property Committee in postponing, until July 13, 1903, the submission of properties to public auction, be confirmed. (*b*) That all the above-named properties be offered for letting upon the conditions set forth in the report. (*c*) That the seal of the Council be affixed to the formal appointment (in duplicate when ready) of Mr. Andrew Young as auctioneer and agent in connexion with the auction."

The report was referred back for further consideration.

Underground Rooms in St. Pancras. — The Public Health Committee reported :—

"As the result of inquiries which we caused to be instituted with regard to the existence of underground rooms separately occupied in contravention of the provisions of Section 96 of the Public Health (London) Act, 1891, our attention was called to a large number of illegally occupied underground rooms in the Metropolitan Borough of St. Pancras. We communicated with the Borough Council on the subject and they stated in reply that they recognised the fact that there was a large number of underground dwellings in the borough, and that they harboured a great number of persons who were driven to take refuge therein by the dearth of other dwelling accommodation. They also stated that they considered that the well-being of the poorer inhabitants was best served by elasticity in the restrictions with regard to underground dwellings until such time as the County Council, the Borough Councils and private enterprise had provided sufficient dwelling accommodation to relieve the pressure. On receipt of this letter we caused a detailed inquiry to be made with the result that it was found that over 400 tenements in the borough, affording accommodation for more than 1,000 persons, were occupied separately although they contravened the provisions of the law relating to underground rooms beginning to be accupied after 1855. Ten of these tenements, accommodating twenty-nine persons, did not even conform to the standard prescribed for underground rooms let antecedent to 1855. In communicating these facts to the Borough Council we stated that we could not accept the reasons given by them as sufficient to justify the Borough Council in allowing the law to be contravened, and we expressed the hope that the Borough Council would, on further consideration, give instructions for the provisions of Section 96 of the Public Health (London) Act, 1891, to be enforced.

On March 19, 1902, the Borough Council replied that they were causing a complete inspection of all the underground rooms within the borough to be made, and that they would proceed at the earliest opportunity to consider their position with regard to such rooms when they had all the data before them, the matter being of considerable magnitude and great seriousness.

On May 23, 1903, the Borough Council forwarded a copy of a report by Dr. Sykes, their Medical Officer of Health, upon the results of the inspection, and stated that with a view to dealing with illegally occupied underground dwellings, the report had been referred to the Housing of the Working Classes Committee.

The Report discusses some legal difficulties arising under Section 96 of the Act, and refers to the subject of hygienic requirements in underground rooms generally. Dr. Sykes states that it is undesirable at present to enter upon the requisites of the Act of 1891. As regards underground rooms not complying with the requisites of the Act of 1855, he groups the rooms in four divisions comprising eight classes. The defects of the room in three of these classes can, Dr. Sykes states, be more or less easily remedied, and in two other classes of rooms the defects can be remedied in particular instances. To one class, there are no rooms to be assigned, and in the remaining two classes the defects are practically irremediable, viz, Class I., *i.e.*, rooms less than 7 ft. high from floor to ceiling, containing 113 rooms, and Class III, *i e*, rooms with the ceiling less than 1 ft. above the ground level, containing 527 rooms. Dr. Sykes suggests that the rooms should be dealt with consecutively and at intervals, 'so as to avoid the serious effects of suddenly displacing a large population.' We recommend that a letter be addressed to the St. Pancras Borough Council stating that the London County Council considers it of great importance that steps should be taken to enforce the provisions of Section 96 of the Public Health (London) Act, 1891, with regard to underground rooms in the borough, and asking what action they are taking upon the report of their Medical Officer of Health on this subject."

Mr. Macdonald said a deplorable state of affairs was brought to light in the Report. Unfortunately, people were turned out of one street and went into another. It would be well if there was more unity of action with regard to the enforcement of the Act.

Mr. Leon considered that it would be well if the County Council superseded the Borough Councils in the administration of the Act.

Dr. Cooper said the difficulty was that the duties under the Act devolved on the Local Authorities, and there were twenty-nine different ways of administering it.

The Report was adopted.

Ground Plan and Annual Map of London.—It was agreed :

(*a*) That the charge for the 6-in. annual map of London be fixed at 1s. per sheet, or 35s. per copy.

(*b*) That advertisements be issued acquainting the public that the Ordnance survey has been brought up to date, and that tracings of any particular property on the scale of 5 ft. to the mile can be obtained upon the following terms :—

To public authorities, upon making their own tracing, 5s. per acre, or 7s. 6d. per acre if tracing is supplied.

To the general public, tracings of any one house will be supplied upon payment of a fee of 2s, and in the case of adjoining houses a further fee of 6d for each house.

Theatres, &c.—Applications as to the following works were agreed to :—

Widening of passage way on east side of Town Hall, Spa-road, Bermondsey, from 3 ft. 6 in. to 10 ft. (Borough Engineer and Surveyor 1or the Borough Council of Bermondsey).

Coliseum building on site of houses abutting upon St. Martin's-lane, Bedfordbury, and May's-buildings (Mr. F. Matcham for Mr. O. Stoll). The building will accommodate 2,939 persons, including standing room.

Alteration to His Majesty's Theatre, Haymarket, including the provision of a new floor of offices above the existing dressing-rooms (Messrs. Romaine-Walker, & Besant for Mr. Beerbohm Tree).

Additional dressing-room accommodation at the London Hippodrome (Mr. Matcham).

New theatre, corner of High-street, Lewisham, and Hither Green-lane, to accommodate 1,330 persons, seated and standing (Messrs. Briggs & Jeyes).

Extension of stage at Queen's Hall, People's Palace, Mile End-road, E. (Mr. C. Brandon).

Indication of Houses of Historical Interest.—On the recommendation of the Historical Records and Buildings Committee it was agreed to erect memorial tablets on the following houses of historical interest in London,

viz.—(1) Holly Lodge, Campden Hill, Kensington (Lord Macaulay); (2) No. 22, Theobald's-road (Earl of Beaconsfield); and (3) No. 4, Whitehall-gardens (Sir Robert Peel).

Christ's Hospital.—The same Committee reported:—

"The Council will know that the buildings originally comprising Christ's Hospital, Newgate-street, have nearly all been demolished. They contained many features of exceptional interest, and of these it is very desirable that there should be some adequate record. Owing to the pressure of work in the architect's department, however, it was not possible for this to be secured by ordinary means, and in these circumstances, five officers of that department, viz., Messrs. Brooks, Peyto, Wylde, Hallam, and Young undertook in their own time to take measurements and particulars of the most interesting portions of the buildings. As a result they made eight drawings of great value which they have allowed to be reproduced for the use of the Council. We feel sure that the Council will appreciate the action taken by the above-mentioned officers in the matter."

Housing.—The Housing of the Working Classes Committee reported as follows, the recommendation being agreed to:—

"On October 7, 1902, the Council accepted the tender of Messrs. F. and F. H. Higgs, amounting to 23,000*l.*, for the erection of Durham Buildings, York-road, Battersea. These dwellings consist of two blocks of five-story buildings, and the contract provided that the second block should be commenced on the completion of the first. We have since found it possible to arrange for the second block to be commenced at once, and Messrs. Higgs have agreed to do this on terms favourable to the Council. . . . We recommend that the seal of the Council be affixed to the supplemental agreement with Messrs. F. and F. H. Higgs in connexion with the erection of Durham-buildings, York-road, Battersea."

Improvement.—The Improvements Committee recommended, and it was agreed, that the supplemental estimate of 2,000*l.* submitted by the Finance Committee be approved, and that the Improvements Committee be authorised to incur further expenditure on capital account up to 2,000*l.* in connexion with the widening of Southampton-row to 105 ft., between Fisher-street and Theobald's-road, necessitated by the proposal to construct in the thoroughfare an open approach to the tramway subway.

The Council adjourned soon after seven o'clock.

ARCHITECTURAL SOCIETIES.

MANCHESTER SOCIETY OF ARCHITECTS.—On July 4 some of the members made a sketching visit to Whalley and Uytton Churches and to Stonyhurst College, the Early Renaissance portion of which provided some interesting sketching.—The rain unfortunately prevented a good attendance at the visit to the car depôt in Hyde-road. Mr. J. Gibbons, the architect, kindly explained the design and construction of this very interesting building, the first part of which is now approaching completion.

COMPETITIONS.

CHILDREN'S HOME, CROYDON.—The first premiated design in this competition was that submitted by Mr. J. Hatchard Smith, 41, Moorgate-street Buildings, E.C.; the second was by Messrs. Wills & Anderson, 4, Adam-street, Adelphi.

RELIEF STATIONS, CROYDON.—The first premiated designs for two relief stations at Croydon were those submitted by Messrs. Wills & Anderson, 4, Adam-street, Adelphi.

METROPOLITAN ASYLUMS BOARD.

THE usual fortnightly meeting of the Metropolitan Asylums Board was held on Saturday last week at the offices, Victoria Embankment, Sir R. Hensley in the chair.

Correspondence was received from the Local Government Board with reference to the additional accommodation which it is proposed to provide for ambulance nurses at the South-Eastern Ambulance Station, stating that they considered it desirable that the Asylums Board's Architect should confer with the Board's Architect on the subject. The Southwark Guardians wrote protesting against the proposal to pull down the temporary buildings at the North-Eastern Hospital, and to erect permanent buildings in their place.

Fountain Hospital Buildings.—The Hospitals Committee submitted a Report dealing, among other matters, with the proposal to erect a residence at the Fountain Hospital, Tooting, for the Medical Superintendent. On January 24 last the plan adopted by the Board was forwarded to the Local Government Board for their approval. In connexion with this Dr. Downes wrote stating that the question had been raised as to how far it was desirable to add a permanent building to an ostensibly temporary hospital. Dr. Downes having expressed a desire to confer with the Asylums Board on the matter, the Committee had an interview with him, the result of which was that the Committee instructed the architects, Messrs. Aldwinckle & Son, to report "on the possibility and probable cost of substituting non-flammable material for the present match-board lining and other woodwork . . . and on the life of the external structures." The architects' report had been before the Works Committee, who requested them to see the Superintending Architect of the London County Council. Having conferred with the Architect to the London County Council, Messrs. Aldwinckle submitted a further Report on the question of minimising the risk from fire, in the course of which they stated that the licence under which the hospital was erected expired in November next. The general construction was far in advance of ordinary temporary buildings, and showed no signs of deterioration after a lapse of ten years. "The buildings all stand upon brick and concrete bases, and the floors are laid upon 6 in. of concrete throughout. All passages are paved with tiles or asphalt laid upon cement concrete, except those of the staff homes, as are also the floors to the ward kitchens, &c." All the subways containing steam or hot-water pipes were of brick and covered with fireproof floors. "The whole of the buildings are covered externally with galvanised iron. There is a complete system of telephones, fire-alarms, and fire-extinguishing apparatus. The cost of erection was 128,000*l.*, and the hospital had been found extremely economical for administrative purposes. The Report continued: "In view of the recent fire at Colney Hatch Asylum, it is felt that, although the several buildings are very substantially erected, there are some steps which might be taken to minimise the risk of fire, and it is very desirable . . . . . to continue the hospital in its present sphere of usefulness." The architects recommended that the following works should be carried out:—The removal of the whole of the match-boarding with which the walls and ceilings are lined internally; filling in between the fir quartering of all external walls with brickwork in cement, making the walls solid; lining the walls and ceilings internally of all the ward pavilions, eighteen in all, with fibrous plaster on wire netting, or with granitic plastering, the ceiling in either case to be laid on metal lathing; lining the walls and ceilings of all the remaining temporary buildings with "uralite"; substituting fireproof partitions for all deal framed or boarded partitions in the homes for nurses and servants; substituting teak for deal flooring in the corridors of those buildings, and providing an extra escape door to each of the buildings. The removal of the whole of the roofs and columns from the connecting covered ways, and the substitution of cyanide paint for all internal paint work. The cost of the several works was estimated by the architects to be 13,200*l.* Having discussed the whole matter, the Committee recommended that the work be carried out at the estimated cost. This was agreed to. The question of the erection of a residence for the Medical Superintendent was allowed to stand over pending a decision as to the future of the hospital.

Tooting Bec Asylum.—The same Committee submitted a statement showing that the total expenditure incurred by the Board in respect of Messrs. Johnson & Co.'s contract for the main portion of the Tooting Bec Asylum (the whole of the buildings with the exception of the receiving home for children and the new ambulance station) had been 202,550*l.* 17*s.*, or 1,072*l.* 10*s.* 10*d.* less than the contract sum of 204,523*l.* 7*s.* 10*d.* That amount did not, however, represent the actual saving, inasmuch as during the progress of the building works amounting in value to nearly 2,500*l.* were ordered by the Board, which were not contemplated when the tender was taken. Among those new works was a pathological room (290*l.*), a granite road and tramway for heavy traffic at the back entrance to the asylum (750*l.*), laying rain-water drains in concrete (600*l.*), fitting up additional padded rooms (226*l.*), additional electric bells and telephones (196*l.*), alterations to main coal-store and approaches (164*l.*), and sundry minor works. The actual saving would, therefore, be about 4,500*l.* A considerable part of the saving was due to the Managers substituting revised plans in the case of the laundry, the net saving effected being 1,557*l.* 17*s.* 6*d.* The contract was exclusive of certain subsidiary contracts, amounting to 20,447*l.*, for laundry machinery, fittings, &c.

North-Eastern Hospital.—Mr. Helby again brought up a motion rescinding the resolution of the Board on March 7 last approving of steps being taken for pulling down the wood structures at the North-Eastern Hospital. After a lengthy discussion, in the course of which the Chairman stated that when the buildings were put up it was ordered that they should be of the most fragile character, Mr. Helby's motion was, on a division, carried by 24 votes to 17.

APPLICATIONS UNDER THE 1894 BUILDING ACT.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Lines of Frontage and Projections.

St. Pancras, West.—An addition to the London Temperance Hospital on the east side of Hampstead-road, St. Pancras (Mr. J. A. Tregelles for the Board of Management of the Hospital).—Consent.

Westminster.—One-story shops upon part of the forecourts of Nos. 76, 78, 80, 84, 86, and 88, Grosvenor-mansions, Victoria-street, Westminster (Mr. F. G. Richardson for Mr. M. Jenks).—Consent.

Hammersmith.—A modification of the conditions imposed as to the erection of an iron, concrete, and glass shelter in front of the new King's Theatre, Hammersmith-road, Hammersmith, so far as relates to the fixing in the sides of the shelter of the words "King's Theatre" (Mr. W. G. R. Sprague for Mr. J. B. Mulholland).—Consent.

Islington, West.—A projecting iron sign with lamp at the "Lincoln Arms" beerhouse, No. 52, York-road, Islington (Mr. A. Dixon for Messrs. Whitbread & Co., Ltd.).—Consent.

Marylebone, East.—Two projecting signs at No. 8, Oxford-street, St. Marylebone (Messrs. Sims & Woods for Messrs. Tobias Brother).—Refused.

Wandsworth.—Ten houses on a site on the south side of Replingham-road, Southfields, Wandsworth, abutting also upon Elborough-street and Trentham-street (Mr. G. Ryan).—Refused.

Woolwich.—An addition to No. 19, Plumstead-road, Woolwich (Mr. H. O. Thomas) for Messrs H. R. W. Pritchard & Co.—Refused.

Width of Way.

Strand.—A building (to be known as the London Coliseum) abutting upon St. Martin's-lane, May's Buildings, Bedfordbury, and Taylor's-buildings, Strand (Mr. F. Matcham for the London Coliseum, Limited).—Consent.

Islington, West.†—Buildings on the north-east side of Wellington-road, and south-west side of Adam's-place, Holloway (Mr. E. J. Harrison for Mr. R. Loomes).—Consent.

Woolwich.—Retention of a building at the rear of No. 48, Princes-road, Plumstead (Mr. J. O. Cook for Mrs. S. Fuller).—Consent.

Width of Way and Lines of Frontage.

St. George, Hanover-square.†—A projecting porch and oriel window to a new building upon the site of Nos. 41 and 43, Maddox-street, St. George, Hanover-square (Mr. W. S. Weatherley for Mr. E. Arnold).—Consent.

Deptford.—A building on the site of Nos. 112, 114, and 116, Kender-street, New Cross, Deptford (Messrs. E. Runtz & Co. for Mr. G. Newman).—Consent.

Norwood.—A one-story shop on the east side of Dalberg-road, Water-lane, Brixton, with external walls at less than the prescribed distance from the centre of the roadway of Effra-terrace (Mr. H. P. Wyatt for Messrs. W. H. and F. Baker).—Refused.

Deviation from Certified Plans.

St. George, Hanover-square.—Deviations from the plans certified by the District Surveyor, so far as relates to the proposed rebuilding of Nos. 41 and 43, Maddox-street, St. George, Hanover-square (Mr. W. S. Weatherley for Mr. E. Arnold).—Agreed.

Strand.—Deviations from the plans certified by the District Surveyor, so far as relates to the proposed erection of a building upon the site of Nos. 36, 38,

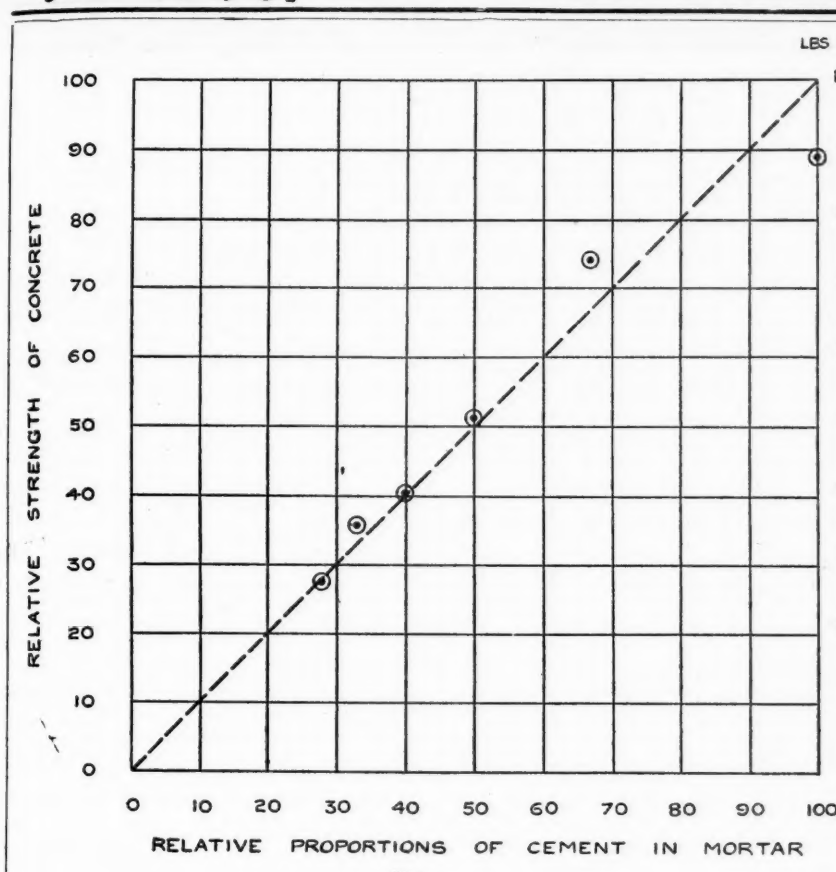


Fig. 2.

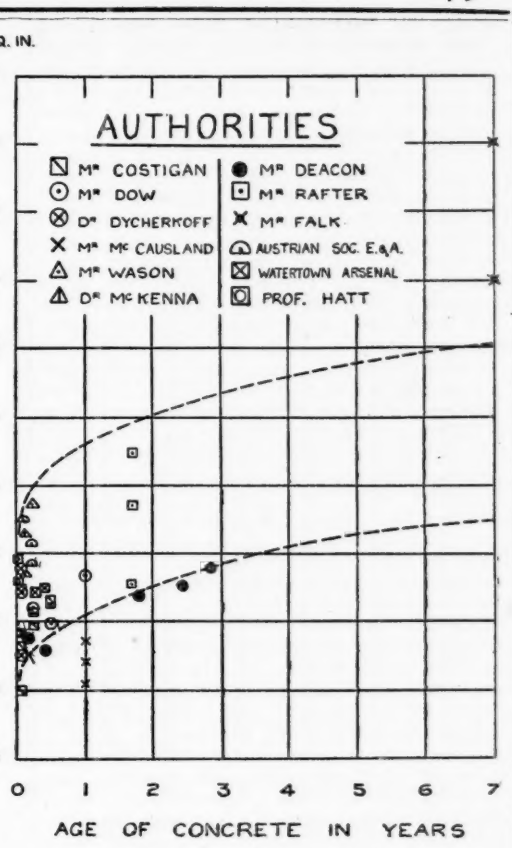


Fig. 4.

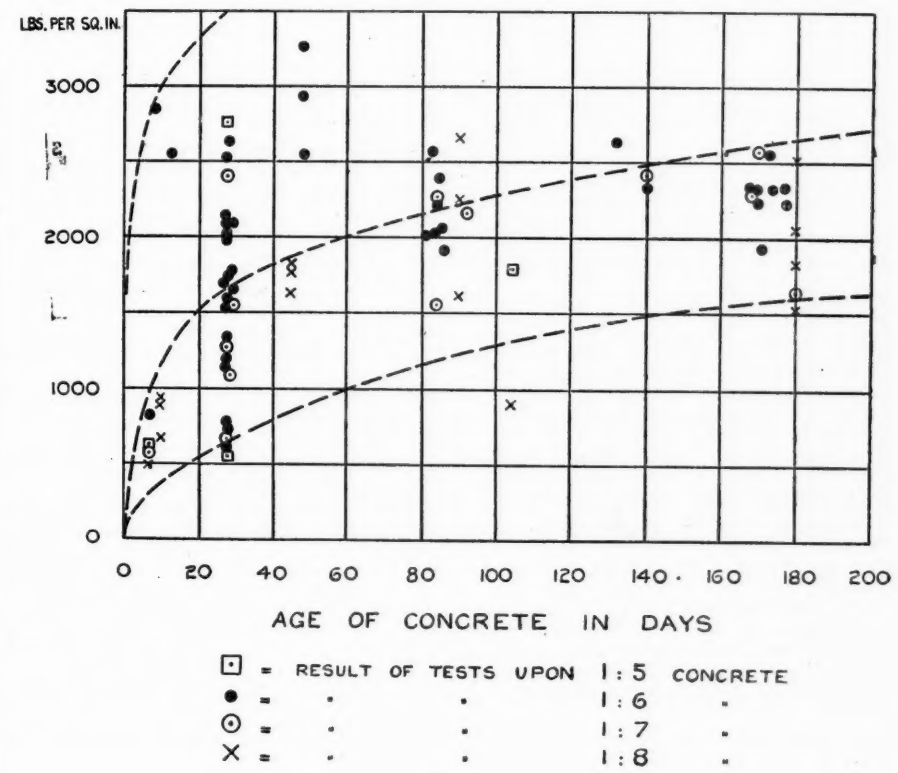

LBS. PER SQ. IN.
3000
2000
1000
0
0 20 40 60 80 100 120 140 160 180 200
AGE OF CONCRETE IN DAYS
⊡ = RESULT OF TESTS UPON 1:5 CONCRETE
● = " " 1:6 "
⊙ = " " 1:7 "
× = " " 1:8 "

Fig. 3.

Illustrations to Student's Column.

and 40, Glasshouse-street, Regent-street (Messrs. D Cubitt, Nichols, Sons & Chuter for Mr. H. J. Marsh).—Agreed.

Formation of Streets, &c.

Wandsworth.—That an order be issued to Mr. A. E. Chasemore sanctioning the formation or laying-out of a new street for foot traffic only on the site of Nos. 13 and 15, High-street, Putney, to lead from High-street to Brewhouse-lane, and an iron roof over such street (Mr. T. S. Jay).—Agreed.

Hammersmith†.—The widening of Heath-place, Uxbridge-road, Hammersmith, to 40 ft. (Messrs. Richardson & White for Messrs. Griggs Brothers).—Consent.

Dwelling-houses on Low-lying Land.

Lambeth, North.—Three buildings on low-lying land situated at New-cut, Lambeth (Messrs. Flood & King for Messrs. E. H. and H. C. Ruscoe.—Consent.

*** *Recommendations marked † are contrary to the views of the Local Authorities.*

The Student's Column.

CONCRETE-STEEL.—III.

THE PROPORTIONS OF CONCRETE (*Continued*).

WHATEVER may be the proportions chosen, the value of the concrete will materially depend upon the thoroughness of mixing. In his "Treatise on Masonry Construction," Professor Ira O. Baker says that: "It is possible to increase the strength of really good concrete 100 per cent. by prolonged trituration and rubbing together of its constituents." In practice it is frequently cheaper to use more cement or concrete and less labour, but for concrete-steel work no substitute can be accepted for the most thorough mixing of the ingredients. Good concrete can be secured either by hand or by machine mixing, but in the former case the difficulty is to get the work done properly. The material must be turned over thoroughly, the shovels must find their way to the boards, and the mixture must be picked up from the bottom and turned over and over again. This is hard work, and, especially in warm weather, the men are inclined to become optimistic, and to believe that a batch of concrete is finished, when in reality it is only about half mixed. When machine mixing is adopted, no adverse human intellect opposes the completion of the process, and the result is far more likely to be satisfactory. Various forms of concrete mixers are available in the present day. A simple and effective apparatus now in use on the Vauxhall Bridge works consists of a horizontal vessel of segmental form provided with a series of stirring blades on a central shaft. The receptacle has an open top and can be rotated about the shaft so as to tip out the contents when required, while the revolution of the blades still continues. Ballast is brought in skips along a tramway ending opposite the hopper of the machine, each skip containing the exact quantity for a batch of concrete, and the necessary volume of cement is measured into a box on the opposite side of the hopper. The materials are tipped into the machine at the proper time, and sufficient water is added from a tap in a convenient position. The entire apparatus is below the level of the decking, so that it is easily managed and the process can be observed without trouble. Some useful data as to the relative strength of hand and machine mixed concrete are recorded in the Report of the Watertown Arsenal for 1897,* relate to two series of concrete piers, one series being hand mixed and the other machine mixed. The average compressive strength of the former was 989 lbs. per square inch, and of the latter 1,098 lbs. per square inch, thus showing an advantage of 11 per cent. in favour of machine mixing. Another test made at the same place shows an advantage of more than 25 per cent. in favour of machine mixing. Other essential points connected with the manipulation of concrete employed in combination with steel are uniformity and sufficiency of ramming, and the careful bonding of fresh and set concrete so that monolithic construction may be secured. Care must also be taken to ensure perfect contact between the concrete and the steel. As will be shown later, the tensile resistance of concrete is not taken into account in the

* Report of the Watertown Arsenal, 1897. "Tests of Metals and other Materials for Industrial Purposes," pp. 349-385.

design of concrete-steel floors, beams, and other members subject to flexure. Consequently little is to be gained by increasing the proportion of cement in the concrete for those parts that are in tension. But the opposite is the case in connexion with compression, which is resisted chiefly by the concrete. If the strength of concrete in the compression portions be increased with the idea of reducing the depth of floor panels, it does not follow that the cost will be correspondingly reduced. The moment of resistance for a rectangular beam being $R = f b d^2 \div 6$, it is evident that resistance is directly proportionate to the square of the depth, and a small decrease of depth consequently means a comparatively large decrease of strength. At the same time, as the quantity of concrete decreases proportionately to the first power of the reduction in depth, the saving of concrete will be comparatively small. Further, the cost of concrete decreases less rapidly than the quantity, inasmuch as cost always includes expenses, which are unaffected by a slight diminution of depth. A further point worthy of mention, and confirmed by the recent investigation of M. Considère, is that the cracks appearing in exposed tension members are more serious in rich than in poor mixtures of concrete. In compression members, however, there are satisfactory reasons why richer proportions should be adopted. In the first place, the concrete is largely, if not entirely, relied upon for resistance; and in the second, it appears from the results obtained by M. Considère that as a consequence of the first load the elastic limit of the concrete increases very considerably with the proportion of cement. Consequently, where high resistances are necessary, it may frequently be desirable to use cement freely, especially as the increase of cost will not be great. Columns and foundations are of far more importance than beams and floor joists, for their failure may involve the collapse of an entire building, whereas the failure of a floor, although sufficiently undesirable, is of less consequence. Finally, the use of richer concrete for compression members may sometimes permit the adoption of a smaller cross-section, thus reducing the space occupied by columns and stanchions, an advantage that will often be appreciated by those occupied with the design of buildings.

THE PHYSICAL PROPERTIES OF CONCRETE.

From what has already been said, it is clear that the widest differences are to be expected in records as to the strength of concrete. Even in iron and steel, which by comparison are simple in nature and constitution, considerable variations exist, but when either material is ordered from the maker subject to the provisions of a given specification there is every reason for anticipating more or less exact compliance with the expressed requirements. Concrete cannot be purchased in the manufactured form, and the physical properties of the finished article vary from case to case, even when the ingredients are of apparently uniform quality, and when the greatest care is taken to ensure uniformity of treatment. Portland cement itself is now made according to scientific principles, and is carefully tested by all reputable makers; the tests, however, cannot be conducted upon the material in its manufactured state, but only after manipulation, the influence of which is a variable quantity. Sand and aggregate vary from place to place, and in the same place from day to day or hour to hour. There is little wonder, therefore, that the results of experiments upon concrete, conducted in scientific laboratories, do not afford the guidance desired by the architect and the structural engineer. Nevertheless, the data obtained by purely scientific investigation are of much value, for they serve to demonstrate the great possibilities of concrete construction, and lead practical men to think of improved methods by the aid of which higher standards of strength may be attained. In the notes which follow, some of the most reliable records, collected from various sources, are presented in a form which is intended to be convenient for comparison and reference.

Part of the resistance of concrete to crushing is due to the frictional resistance of one piece of aggregate to motion along the face of another piece. It is also the fact that the cement adheres more tightly to the irregular surface of broken stone than to the smooth surface of pebbles. Table III. gives some figures calculated from the results of a series of experiments made in 1897 by Mr. A. W. Dow, for the Engineering Department of the District of Columbia, U.S.A. The tests were made upon 12 in. cubes, and it is worthy of note that the gravel concrete shows an important increase of strength with age. According to the results obtained from another series of forty-eight experiments upon 4-in. cubes,* it appears that the compressive strength of gravel-concrete is less than 80 per cent. that of concrete made with broken stone. From these figures it may be inferred that an aggregate of broken stone is specially suitable for all members in which compressive strength is the chief factor for consideration. So far as we are aware, no records are available for showing the relative merits of gravel and stone concrete for use in members where tensile strength exists and is resisted by steel reinforcement.

Table III.—Relative Compressive Strength of Gravel and Broken Stone Portland Cement Concrete.

Age when Tested.	Strength of Gravel Concrete. (Stone Concrete = 100.)	No. of Tests.
10 days.	76	2
45 ,,	91	2
3 months.	119	2
6 ,,	73	2
12 ,,	108	5

Possibly the rounded surfaces of the pebbles may not be disadvantageous in the case of flexure, by permitting an infinitesimal "slip," similar to that which is known to occur between the concrete and steel embedded therein. Providing the volume of mortar is approximately equal to the voids in the aggregate, the strength of concrete increases with the quantity and the strength of cement used. This aspect of the case is demonstrated by Fig. II., in which are plotted some of the results of a series of experiments made by Mr. G. W. Rafter* upon 12-in. cubes, the voids of the aggregate being practically filled with mortar varying from 1 : 1 to 1 : 6 in composition. Proportionately similar results were also evidenced by the French experiments to which reference has already been made.

Some recent data as to the resistance of concrete to direct compression are summarised in Table IV., and the results condensed in this table are plotted in Fig. III., with the exception of figures relating to ages beyond six months. The figures in the first three lines of Table IV. show clearly the increase of strength with age, and similar evidence is afforded by tests conducted during the progress of the work at the Vyrnwy dam.† The following summary shows approximately the crushing strength of concrete blocks tested on the works at various ages :—

Table V.—Average Compression Strength of Portland Cement Concrete Blocks Tested at the Vyrnwy Dam.

Average Age when Tested.	Average Strength.
1·2 months.	1,772 lbs. per sq. in.
3·5 ,,	1,586 ,,
21·0 ,,	2,372 ,,
29·0 ,,	2,519 ,,
34·0 ,,	2,799 ,,

Other experimental data not quite suitable for inclusion in Table IV. will be found in Table VI.

However satisfactory it may be to know that the strength of concrete grows with age, a matter of more immediate practical importance is to be acquainted with its properties, and to be able to predict the probable behaviour of

Table IV.—Compressive Strength of Portland Cement Concrete Cubes of Various Proportions and Ages, in lbs. per sq. in.

Proportions.	Age when Tested. Four Weeks.	Six Weeks.	Three Months.	Six Months.	Twelve Months.	Size of Cube.	Authority.
Parts.	lbs.	lbs.	lbs.	lbs.	lbs.	in.	
1 : 2 : 4	1,712	—	2,182	2,332	—	12	Mr. Costigan, Proc. Can. Soc. C.E., 1901-2.
1 : 2 : 5	991	—	1,997	2,240	—	12	
1 : 2 : 6	—	1,756	2,190	1,987	2,670	12	Mr. Dow, Eng. Dept., Washington, 1897.
1 : 2 : 3	2,783	—	—	—	—	12	Dr. Dycherkoff, in "Der Portland Cement und seine Anwendungen in Bauwesan."
1 : 2 : 5	2,414	—	—	—	—	12	
1 : 3 : 5	1,661	—	—	—	—	12	
1 : 3 : 6½	1,534	—	—	—	—	12	
1 : 2 : 4	—	2,734	—	—	—	6	Dr. McKenna, Columbia University, U.S.A.
1 : 2 : 4	—	3,283	—	—	—	6	
1 : 2 : 3	—	—	—	—	1,751	6	Mr. McCausland, Proc. Am. Soc. C.E., vol. xxix.
1 : 2 : 5	—	—	—	—	1,090	6	
1 : 3 : 4	—	—	—	—	1,432	6	
1 : 3 : 5	—	—	—	—	1,092	6	
1 : 3 : 5	—	—	3,187	—	—	12	Mr. Wason, Proc. Am. Soc. C.E., Vol. xxvii.
	—	—	4,263	—	—	12	
1 : 3	—	3,500	—	—	—	4	Report of Austrian Soc. Eng. and Archts., 1895.

Table VI.—Compressive Strength of Portland Cement Concrete Blocks of Various Proportions and Ages, in lbs. per sq. in.

Proportions. Cement.	Sand.	Aggregate.	Age when Tested.	lbs. per sq. in.	Size of Block.	Authority.
1	1	voids filled	600 days	4,467	12-in. cube	Report of New York State Engineer, 1897
1	2			3,731		
1	3			2,553		
1	3	6	28 days	2,455	8 in. by 8 in. by 32 in.	Mr. Wason, Proc. Am. Soc. C.E., Vol. XXVII.
1	2	4	7 years	7,000-9,000	4-in. cube	Mr. Falk, Proc. Am. Soc. C.E., Vol. XXIX.
1	3	5	7 years			
1	2	4	9 days	2,880	12 in. by 8 in. dia.	Prof. Hatt, Purdue Univ., U.S.A., 1902
			12 days	2,575		
1	—	3	39 days	2,850-3,375	3½ in. by 3½ in. by 10 in.	Report of Austrian Soc. Eng. and Archts., 1895
—	—	—	27-31 days	1,833	6-in. cube	Tests at Watertown Arsenal, 1893
			36-46 days	1,950		
			51-65 days	2,426		
			75-88 days	2,481		
1	2	4 (cinder)	8 days	502	12 in. by 8 in. dia.	Prof. Hatt, Purdue Univ., U.S.A., 1902

* "Cements et Chaux Hydrauliques." Paris, 1891.

* Report of the New York State Engineer. 1897.
† Report as to the Vyrnwy Dam, by George F. Deacon. 1885.

concrete during the earlier stages of hardening. This is the critical period in most structural works when loads must be carried by the concrete before its maximum strength has been developed. From the data now presented it is clear that the compressive strength of concrete is an extremely variable quantity, but that with adequate proportions and careful manipulation there should be no difficulty in securing a compressive strength of 2,500 lbs. per square inch with 1:6 concrete at the age of two or three months. The figures indicate that considerably greater strength may be attained with richer proportions and under specially favourable conditions, but where concrete is mixed, as usual, on the site of the works to be executed, it cannot be recommended that the ultimate resistance should be estimated at more than 2,500 lbs. per square inch. The limit suggested by the middle curve in Fig. III. is 1,700 lbs. at one month and 2,200 lbs. at three months, and by the bottom curve 700 lbs. at one month and 1,200 lbs. at three months; but it should be remembered that the results in the diagram refer almost exclusively to 1:6 and 1:8 concrete, and that the middle curve practically represents the average for the former mixture, and considerably less than the average for the latter. Fig. IV. is a diagram combining the averages given in Tables IV., V., and VI. This diagram serves to show the gaps remaining to be filled by further experimental research, and to suggest that the compressive strength of well-made concrete is probably very much greater than has been supposed hitherto.

The compressive strength of coke concrete is said by Professor Ira O. Baker to vary from 600 lbs. to 700 lbs. per square inch, but this estimate appears to be somewhat high.

Correspondence.

THE ANCIENT LIGHTS BILL.

SIR,—In your Leader on "The Ancient Lights Bill" there is one consideration that I did not notice mentioned, *i.e.*, would not the relaxation of the law relating to light and air lead to crowding of buildings in towns even more than at present? That is a consummation that the *Builder*, I take it, would not devoutly wish. Is not an abundant supply of light and air necessary to health, and would not the law relating to light and air be beneficial if it were made even more stringent?

EDWARD PARKE.

STRATFORD-ON-AVON.

SIR,—As a letter has appeared in the Press from Mr. Sidney Lee upon the alleged vandalism at Stratford-on-Avon, in which, under a misapprehension, he implies that the British Archæological Association had made accusations of deliberate vandalism against the Corporation of that town, I ask your permission as Hon. Secretary to say that such was not the case. As to the communications that have passed between the local authorities, Mr. A. Flower, and myself on behalf of my Council, I can only say we have been treated with the greatest courtesy, and, I trust, our views have been expressed with the same consideration. Our contention is that it is better to leave the present red brick fronts to the old houses in Henley-street rather than to "restore" them into pseudo-antiques.

GEO. PATRICK.
Hon. Secretary,
British Archæological Association

A TOUR IN BELGIUM.

SIR,—As I am going on a cycling tour in Belgium shortly, architecturally bent, I am taking the liberty of asking whether you or any of your readers know of any places, large or small, in the vicinity of the route we propose taking, of architectural interest.

The route we had mapped out was Bruges, Ghent, Brussels, Namur, Liege, Aix-la-Chapelle, Cologne, and down the Rhine to Rotterdam, and perhaps Amsterdam.

I think this route will include a good deal, but perhaps your experience could suggest something better.

SYDNEY SEARLE.

BOOKS RECEIVED.

HEATING AND VENTILATION OF HOUSES (No. 3 of "Rural Handbooks"). By C. F. Townsend, F.C.S. (Dawbarn & Ward. 6d.)

BRITISH FIRE PREVENTION COMMITTEE.—Mr. Edmund Woodthorpe has resigned his position on the Executive of this Committee.

GENERAL BUILDING NEWS.

CHURCH, MARYLEBONE.—The Bishop of London consecrated on the 30th ult. the new Church of St. Cyprian, which is situate in Dorset-square, Marylebone. Designed by Mr. J. N. Comper, it is in the English style. The church has cost 13,000*l.*

CHAPEL, BIRDWELL, YORKSHIRE.—A new chapel at Birdwell is being erected for the Methodist New Connexion. The existing Sunday-school is being demolished, and the present chapel is to be converted into a Sunday-school, the new fabric being erected on the adjoining site. The accommodation will be for 350 persons, and an organ loft is also provided, the estimated cost being 1,500*l.* Mr. P. A. Hinchcliffe, Barnsley, is the architect.

CHAPEL, WORSBOROUGH, YORKSHIRE. — At Worsborough Dale, on the 9th inst., a new chapel was opened. The chapel at Worsborough Dale has been erected by the Ebenezer Wesleyan Reform body. The new building consists of a chapel to seat 350 worshippers, with school of equal accommodation, in addition to four class-rooms, kitchen, &c., underneath. The plans were prepared by Mr. G. Moxon, of Barnsley. The total cost has been 1,900*l.*

CONGREGATIONAL CHURCH, MONKWEARMOUTH.—On the 8th inst. the foundation stone of the Roker Baths-road Church, Monkwearmouth, Sunderland, was laid. Messrs. Jos. Potts & Son, are the architects, and the church will cost about 5,000*l.* Mr. J. B. Stott is the contractor.

TRURO CATHEDRAL.—The nave of Truro Cathedral has been completed, and it was opened on the 15th inst. The building operations, which began four years ago, have cost 40,000*l.* The work has been carried out from the designs of the late Mr. J. L. Pearson, R.A., under the superintendence of his son, Mr. F. L. Pearson. The western portion of the cathedral, now completed, comprises the nave and aisles with western double porch or narthex, south porch, and western towers. The nave is 112 ft. long, 29 ft. wide (the same width as the choir), and about 70 ft. high. It is divided into four bays, 28 ft. wide intersected by transverse ribs. A western gallery some 20 ft. above the floor is erected over the western bay, carried on comparatively low arches, the sprandrels of which are enriched with sculpture.

SCHOOLS, KINGSWOOD, GLOUCESTERSHIRE.—New schools are to be erected at Hanham-road, Kingswood, on the main road leading from Kingswood to Hanham. The design of Mr. J. Mackay, architect, Kingswood, was accepted by the late Kingswood School Board, and has been approved by the County Education Committee. The building will be Elizabethan in style, and the schools will afford accommodation for 990 children — 330 in each department for boys, girls, and infants. The boys' and girls' departments are each 88 ft. by 81 ft. in dimension, and between the two schools there is a distance of 60 ft. The infant department is set back a distance of 30 ft. from the boys' and girls' schools. Each school comprises a central hall and six class-rooms, and the rooms are so arranged that the head teacher obtains an uninterrupted view from the hall of all the rooms. Teachers' rooms and cloakrooms will be provided. The heating will be by hot water on the low-pressure system. Beneath the boys' school a room will be provided, 60 ft. by 20 ft. in extent, for the purpose of practical instruction in carpentering and other manual work; and below the girls' school a room, 72 ft. by 25 ft., will be erected for the purposes of laundry-work and cookery.

SCHOOL, EBBW VALE.—The Bedwellty School Board have approved plans for new schools in Mount Pleasant-road, Willowtown, Ebbw Vale, and ordered them to be forwarded to the Board of Education. The school is to consist of two departments—lower mixed and an infants'—and to accommodate 420 scholars. Mr. David Morgan (Messrs. James & Morgan, Cardiff) is the architect.

RESIDENTIAL CLUBS FOR BUSINESS MEN.—A company has lately been formed under the name of "Ingram Houses, Ltd.," for the purpose of providing residential clubs for clerks and young men engaged in business. The company have already secured a freehold site in Stockwell-road, Brixton, and Mr. Arthur T. Bolton, architect to the company, has prepared plans (which the London County Council have passed) for a building to accommodate 270 residents in separate bedrooms measuring at least 7 ft. by 10 ft., and which will comprise a lecture-hall, available for entertainments and concerts, or as a gymnasium; a library; a smoking-room; two billiard-rooms for six tables; a dinner-hall for 200 at one time; together with bathrooms, a bicycle-house, passenger-lifts, and electric lighting. The four freehold houses, Nos. 40-6, in Stockwell-road have been acquired at a total cost of 10,827*l.*, and Messrs. Widnell & Trollope's estimate of the cost of the new buildings amounts to 40,000*l.* The calculated outlay for furniture and equipment is 6,000*l.* The expenses of management are computed at 3,480*l.* per annum, and the annual receipts from rent of bedrooms, with an average of 250 men in the house, at 6,000*l.*

WORKHOUSE, FYLDE.—The foundation-stones of the new workhouse for the Fylde Union were laid on the 2nd inst. The contract for the new building is 43,994*l.* The site on which the new building is being erected is in the township of Wesham, about a mile from the present workhouse, and is just over twenty statute acres in extent. Provision will be made for 300 inmates, but none for children. The number of inmates in the house at present is 139. The architects are Messrs. Heywood & Harrison, of Lytham and Accrington, and Mr. G. Wilson, of St. Anne's-on-the-Sea, is the sole contractor. The building is to be completed by June 1, 1906. Accrington pressed brick, with facings of terra-cotta and stone, will be used, and glazed bricks in the dining-hall and other parts of the interior. The structure will have a southern aspect. The offices and boardroom will be in Wesham-lane.

CONGREGATIONAL CHURCH, KEYWORTH, NOTTINGHAM.—The stone-laying ceremony in connexion with the new Congregational church at Keyworth took place on the 2nd inst. Messrs. Cooper & Sons, of Nottingham, are the contractors, and Mr. R. C. Sutton, also of Nottingham, is the architect. The church, which will possess seating accommodation for 300 people, is to be built in the Gothic style, the exterior being of red brick with stone dressing. On the right of the recess chancel at the pulpit end will be the organ-chamber, and vestry accommodation will be provided on the left. The floor of the chancel, pulpit, and Communion-table is to be raised three steps above the floor of the church.

CHURCH, MARSDEN COLLIERY, DURHAM.—The foundation stone of a new church has just been laid at Marsden Colliery. The structure, which is being built from plans prepared by Messrs. J. Potts & Son, architects, Sunderland, will consist of nave, chancel, and vestry, and there will be a bell turret on the west gable. The nave will contain sitting accommodation for 200 persons. Marsden limestone, with freestone dressings, will be used in building the outer walls, and the seats and other internal fittings will be of pitch pine. Mr. W. D. Allison, of Whitburn, is the contractor.

NEW BUILDINGS IN ABERDEEN.—The Plans Committee of the Town Council has passed the plans of the following new buildings:—Addition to janitor's lodge and greenhouse in connexion with botanical garden at the Grammar School, for the Aberdeen School Board, per Mr. J. A. O. Allan, architect; ice factory on the east side of Stells-road, for the Aberdeen Steam Trawling & Fishing Co., Ltd., per Messrs. Brown & Watt, architects; rebuilding of premises on the north side of Palmerston-road, for the Great Grimsby Coal, Salt, and Tanning Co., Ltd., per Messrs. Brown & Watt, architects; three dwelling-houses on the north side of St. Clement-street, for Mr. J. D. Mackie, solicitor, per Messrs. W. Henderson & Son, architects (amended plan); alterations and additions in connexion with dwelling-house No. 8, Albyn-place, for Dr. J. E. Milne, per Mr. Duncan Hodge, architect; four dwelling-houses on the east side of the private lane running southwards from Fonthill-road and at the rear of certain of the houses in Polmuir-road, for Mr. James Fyfe, per Mr. John Rust, architect (amended plan); sheds and office on the south side of South Esplanade West, for Messrs. Alexander Adam & Co., slaters, per Mr. William Smith, architect; two dwelling-houses and shop on the east side of King-street at its junction with Seaforth-road, for Mr. David Courage, per Messrs. Brown & Watt, architects; two dwelling-houses on the west side of Blenheim-place, for Mr. William Hepburn, per Mr. George J. Milne, architect; dwelling-house on the west side of Pitstruan-place, for Messrs. Cameron & Watt, architects; dwelling-house and shops on the east side of Holborn-street at its junction with Howburn-place, for Mr. James Mearns, per Messrs. Cameron & Watt, architects; amended plan of (*a*) alterations and additions in connexion with the premises Nos. 27–31, Broad-street, and (*b*) a building at the rear on the site of a one-storied building facing the Guestrow, for the New Loan Co., per Mr. John Rust, architect.

PUBLIC SCHOOL, WINCHBURGH, LINLITHGOW.—An addition has just been made to the Winchburgh Public School by Kirkliston Public School Board. The additions give accommodation for 250 scholars, making a total accommodation of 500. Mr. James Jerdan, Edinburgh, was the architect, and the total cost, including a house for the head-master, will be about 4,000*l.*

NEW ENGINEERING WORKS, LEEDS.—Messrs. Graham, Morton & Co., makers of conveying machinery and colliery plant, are building a large new engineering works in Hunslet, Leeds. The works comprise three large bays 50 ft. span over 400 ft. long, together with engine and boiler-house, &c., and other outside buildings. The works will be driven by electric motors, the current being generated by their own machinery. There will be two electric cranes in each bay, or a total of six cranes. There is a railway siding running into the works, and the trucks will be able to run right through the workshop. Mr. Maurice Graham, the active partner in the concern, has lately paid two trips to the United States for the purpose of visiting their engineering shops, and he has applied the information obtained in regard to description of tools and method of organisation, in these new buildings, which will be finished about the end of October.

INEBRIATE HOMES FOR LANCASHIRE.—Lieut.-Colonel Smith, R.E., held an inquiry at the County Hall, Preston, on the 8th inst., into the application of the Lancashire Inebriates Acts Boards for sanction to borrow a sum of 60,000*l.* for the purpose of inebriates' homes, female division, at Langho, near

Blackburn. Mr. Clare, Clerk to the County Council, explained the scheme, and said the buildings had already been erected to accommodate 112 women, and without any further expenditure on administrative buildings, the accommodation could be doubled. At present the county had twelve male and 493 female inebriates in other homes. The male and female block would be 400 yards apart, and the total cost of the female reformatory, including twelve houses, chapel, sewage, and other arrangements would be 73 418*l.* Three hundred and twenty acres of thickly-wooded land had been purchased, at a cost of 17,500*l.*, the average cost being 52*l.* per acre. Drainage would cost 4,000*l.*, but this work had not yet been completed. Mr. Littler, architect, and Mr. Wood, engineer, gave evidence, and the inquiry concluded.

CHANCEL SCREEN, MILVERTON CHURCH, SOMERSETSHIRE. — A chancel screen has just been dedicated at Milverton Church by Archdeacon Askwith. The new chancel screen is 20 ft. long, and is 13 ft. 6 in. high up to the cornice, without measuring the central cross. It stands upon a new granite step, and is built of oak. It is divided into seven compartments, the central one, which is kept as wide as the main approach from the nave, forming the entrance from the latter into the chancel. Into the lower parts are introduced a number of old fifteenth century panels from other parts of the church. Messrs. Harry Hems & Sons, Exeter, carried out the work.

WESLEYAN SCHOOLROOM, ABERYSTWYTH.—The memorial-stones were laid on the 9th inst. of the new schoolroom of the Wesleyan Chapel, which occupies the site of a bit of old Aberystwyth, adjoining the chapel, and at the corner of Great Darkgate-street and St. James's-square. The building is to seat 400, and is built of local blue stone with free-stone dressings. The architect is Mr. John Lewis Evans, and the contractor Mr. Edward Jenkins.

GLASGOW UNIVERSITY EXTENSION.—New buildings for the extension of Glasgow University some time ago received the sanction of the University Court, and at a meeting recently estimates for their erection were approved of, and the work will be forthwith commenced. Provision will be made for the departments of Physiology, Materia Medica, and Forensic Medicine and Public Health in one building, while another will be devoted to the department of Natural Philosophy. The entire cost, including equipment and fittings, will be between 90,000*l.* and 100,000*l.* For designs for both buildings a limited competition took place, and the plans submitted by Mr. James Miller, architect, Glasgow, were selected.

PREMISES, NORWICH.—At the Market-place end of London-street, Norwich, the premises of Jarrolds, Ltd., are being rebuilt. The architects are Messrs. Skipper.

HEREFORD CATHEDRAL.—The Dean of Hereford has issued an appeal for the sum of 5 000*l.* towards the rebuilding of the west front of Hereford Cathedral, after designs by Mr. Oldrid Scott. The Dean adds, in his appeal, that later a further sum of 5,000*l.* will be required for the front of the side aisles.

EXTENSION OF THE VICTORIA HOSPITAL FOR CONSUMPTION, CRAIGLEITH, EDINBURGH.—New pavilions have been erected at the Victoria Hospital for Consumption, Craigleith, Edinburgh. The extension consists of two pavilions of two wards with six beds in each, and one pavilion of two wards with four beds in each, and will increase by twenty beds the accommodation of the Hospital. The additions, &c., are estimated to cost about 7,000*l.* The extensions are from the designs of Messrs. Sydney Mitchell & Wilson, architects, Edinburgh.

FREE LIBRARY, MOTHERWELL, EDINBURGH. — The accommodation of the new library for Motherwell consists of lending library for 30,000 volumes, reading-room for 100 readers, juvenile room, reference library, ladies' room, lecture-hall and museum, recreation-rooms, committee-room, librarian's room, librarian's house, and the necessary book store, staff-room, lavatory, &c. The architects are Messrs. Greig, Fairbairn, & Macniven, Edinburgh. The cost of the buildings is estimated at 9,000*l.*

COLONY FOR EPILEPTICS, CHALFONT ST. PETERS. —A new central administration house for the colony of the National Society for Employment of Epileptics is being erected at Chalfont St. Peters. Mr. C. Grieve, of London, is the architect.

SANITARY AND ENGINEERING NEWS.

WATER SUPPLY, GOSFORTH, &C.—The Whitehaven Rural District Council have adopted a scheme of water-supply for the six parishes of Gosforth, Ponsonby, Haile, St. John's, St. Bridget's and Lowside Quarter, at an estimated cost of 13,800*l.* There will be over twenty miles of mains, The scheme has been prepared jointly by Mr. G. Boyd, Surveyor to the Council, and Mr. Harry W. Taylor, A.M Inst.C.E, Newcastle.

COUNTY BRIDGE, YALDING, KENT.—The new Hampstead-lane bridge, Yalding, has just been opened. The contract was entrusted to Messrs. G. E. Wallis & Sons, Maidstone, whose tender amounted to 4,128*l*, which included the cost of the steel flooring supplied by the Cleveland Engineering Co, Ltd. The new bridge has a waterway of 21 ft., and a clear headway of 9 ft. 6 in. The foundations beneath the water, which are of cement concrete, rest upon clay, and are protected by sheet piling. The retaining and abutment walls are backed with concrete, the facings of the abutments, plinths, copings, &c, being in cast cement concrete, manufactured by Mr. G. G. Girling, of Woolwich. The floor of the bridge consists of two main outer steel girders, carrying Hobson's patent steel flooring plates, placed traversely, and covered with concrete. The roadway is 16 ft. 6 in. wide, and there is also a footpath on one side 4 ft. in width. The gradients throughout are 1 in 20, and the total length of the bridge is 445 ft. The architect was Mr. F. W. Ruck, County Surveyor.

SEWERAGE SCHEME, PENN, STAFFORDSHIRE.—On the 8th inst., at St. Philip's Church Assembly-rooms, Penn Fields, near Wolverhampton, Colonel W. Langton Coke, M.Inst.C.E., held an inquiry on behalf of the Local Government Board into the application of the Seisdon Rural District Council for sanction to borrow 14,000*l.* for sewerage purposes. Mr. Herbert Taylor (Clerk), in explaining the matter, said at present there was no system of sewerage, in the proper sense of the word, and it was the general opinion that a scheme was necessary. The District Council had purchased twenty-three acres of freehold land at Merry Hill, at a cost of 1,134*l.*, and the scheme proposed was gravitation, with septic tanks and continuous filters. The effluent would run over the land, and there would be a broad irrigation before it entered a stream. The cost of the collecting sewers would be 6,141*l.*, and the works would cost 3 503*l.* The district was in the unique position of not having any loans, and its rateable value was 90,000*l.* Evidence in support of the application was given by Mr. R. E. W. Berrington (Civil Engineer).

PIER, YARMOUTH.—The work which has been proceeding for some time upon the renovation and enlargement of the Wellington Pier and the construction of a pavilion has been nearly completed. The work has been carried out under the supervision of Mr. Cockrill, the Borough Surveyor.

FOREIGN.

FRANCE. — MM. Loviot and Cassien-Bernard, architects, have applied to the Council of Paris for permission to construct, on the site of the old Cirque des Champs Elysées, a concert-room to seat 1,500, with two adjoining pavilions, one for a refreshment-room the other for a post office.——MM. Constantin Meunier and Charpentier have completed the model of the monument to be raised by subscription to the memory of Zola. The monument includes a granite pedestal on which an inscription will be engraved. On the right is a figure of a mother with her infant, and two other children, on the left an artisan, in working dress, looking at the family group. The portrait statue of Zola surmounts the pedestal. —— The President of the Republic has inaugurated the new buildings for the Conservatoire des Arts et Métiers, which are to contain laboratories. —— The Town Council of Cognac has decided on rebuilding the Hôtel de Ville there.——M. Gabaret, architect, of Pau, has obtained the first premium in the competition opened by the town of Tarbes for the rebuilding of the Hôtel de Ville.——M. Patouillard has been appointed architect of the works at the Bibliothèque Nationale.——The Hôtel St. Fargeau, which contains the historic library of the City of Paris, is to have extensive repairs. —— M. José de Charmoy, the sculptor, has completed the model for a monument to Edgar Poe, to be erected at Baltimore.——M. Girault, the architect of the Petit Palais, has been commissioned to rebuild the tribunes at the Longchamps racecourse, which he has promised to complete by May of next year.——The death is announced, at the age of eighty-six, of M. Michel Fichot, a draughtsman who had devoted his talent almost entirely to the illustration of the monuments of Champagne and the surrounding districts. His first publication was the "Voyage Archéologique dans le Department de l'Aube." He made numerous drawings for the "Magasin Pittoresque," and produced also a "Voyage Archéologique en Champagne," a monograph on the Church of St. Denys, and the "Statistique Monumentale" of the Department de l'Aube, a considerable work, of which five volumes have appeared, but which is still unfinished.

NEW BATHS, CAPE TOWN.—Tenders will shortly be issued for the erection of the public baths proposed to be erected in Caledonian-square, Cape Town. The first-class pond is 100 ft. by 40 ft. wide, with a tiled gangway, dressing-boxes, and foot-bathing tubs, cold water showers, swimming-club committee and dressing-rooms, diving stages, spring-boards, water-chute, &c. A gallery, capable of seating about 500 people, surrounds the pond. The second-class pond is 75 ft. by 35 ft, and is provided with the usual accessories and gallery, but the general internal appearance is simpler in construction and decoration. The ladies of both classes, as well as the gentlemen, are given access to the large baths direct from their entrance halls. The slipper baths are altogether about fifty in number, including a few vapour baths, and each sex and class have a waiting-room situated between the entrance-hall and the range of bath-rooms. The slipper baths are so situated in relation to the large baths, that in the case of the men's accommodation, one attendant could supervise the whole. Pay-boxes, cloakrooms, stores, and superintendent's and matron's rooms are provided in the most convenient places near the entrance. The estimated cost of the scheme, without including the groups of Turkish baths, is 35,000*l.*

INDIA.—Several new stations on the Basseïn-Henzada branch of the Burmah railways have recently been opened.——A second outlet for the regulation of the supply of water for the Panngzin lake in the Minbu district has recently been provided. The water is supplied from the Irrawaddy river.——The Government of India has sanctioned the expenditure necessary to construct protective works at the Torsa bridge on the Eastern Bengal and Southern railway.——The raising of the crest of the Pegu river embankment to prevent the flood water of the river from entering the canal has now been completed. A new lock has been constructed at Minywa.——Several ancient monuments near Madras have been reported upon by the superintending engineer of the Public Works Department with a view to their being repaired.——*Indian Engineering* says that teak timber of a very high class is to be found in the Kentung Forest, bordering on the Mekong River.——A hospital for women is about to be erected in Bombay. Mr. John Begg, consulting architect to the Government, in consultation with Dr. Boyd, has prepared plans of the new building.——The Chief Engineer of the Public Works Department, Madras, has made an estimate for the construction of a municipal hospital, with subsidiary buildings, at Madura.——A special commission has been appointed to inquire into the construction of a central railway station in Colombo. ——The Nizam's Government has sanctioned the expenditure of four lakhs of rupees for the erection of a new mint house.——Five and a half lakhs of rupees have been sanctioned for providing accommodation for British infantry at Dalhousie.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Messrs. Harding & Vick, timber merchants, have removed from 57, Gracechurch-street, to Founder's Hall, 13, St. Swithin's-lane, E.C.——Mr. W. Duncan Tucker has opened a new timber yard and sawmills at High Cross, Tottenham, to be worked in conjunction with his existing steam joinery works in Lawrence-road, South Tottenham.——Mr. H. W. Buxton, architect, Felixstowe, has removed his office from Lorne-buildings, Victoria-parade, to 26, Hamilton-road, Bank Corner, Felixstowe.

REREDOS, ST. ERTH CHURCH, CORNWALL.—A new reredos has been erected at St. Erth Church. It is constructed of West of England grown oak, and is in the fifteenth century style, occupying the whole of the space beneath the east window. It has been made from a design by the Rev. R. Medley Fulford, formerly F.R.I.B.A. The work has been carried out by Messrs. Harry Hems & Sons, of Exeter.

LONDON MUNICIPAL BUILDINGS.—On the 13th inst. the Select Committee of the House of Lords, of which the Duke of Bedford is chairman, considered the Local Government Provisional Order (No, 5) Bill, the object of which is to confirm provisional orders granted to the Metropolitan Boroughs of Hampstead, Holborn, and Lambeth, by the Local Government Board, and authorising these boroughs to acquire certain lands compulsorily for the erection or extension of municipal offices and buildings. The London County Council opposed in order to obtain the insertion of a saving clause preserving the operation of the Metropolis Management Acts and the London Buildings Acts. Ultimately the Committee found against the insertion of the clause.

PROPOSED NEW MUNICIPAL BUILDINGS, TORQUAY.—The Finance Committee of Torquay Town Council reported at the last meeting of the Council that they had carefully surveyed the plan of the site at Castle Corner for the proposed new municipal buildings as well as the adjoining properties, also a diagram showing the result of the three trial pits which had been sunk, and were pleased to report that they were satisfied from the Borough Surveyor's statement that there would be no difficulty—so far as obtaining a satisfactory foundation for the building was concerned. As a result of a conference between the Town Clerk and the Borough Surveyor, the suggested accommodation to be provided in the building was submitted and approved by the Committee. Provision was made in the scheme for offices for the Town Clerk, Borough Surveyor, Water Engineer, Borough Accountant, Borough Treasurer, the rate collectors, the Medical Officer, committees, reception and other rooms for the Mayor, an office for inquirers in connexion with the Electrical Department, Town Hall and Assembly Room, a Council Chamber, and other offices. The Committee recommended that invitations be issued to architects to submit sketch plans and designs, with an estimate of the cost in each case for the erection of municipal buildings, the cost of which complete should not exceed 30,000*l*, premiums of one hundred guineas, fifty guineas, and twenty-five guineas respectively to be offered for the three designs placed first, second, and third respectively

by an assessor to be appointed by the President of the Royal Institute of British Architects. Mr. Rockhey proposed the adoption of the report. Mr. Kerswill seconded. Alderman Appleton thought the present a most inopportune time to bring forward this scheme. He moved, as an amendment, that the question be postponed for the present. Alderman Winter seconded. The Mayor ruled Alderman Appleton's amendment out of order on the ground that the Council had already passed a resolution to the effect that the time had arrived when it was desirable to take into consideration the question of municipal buildings. Mr. Ball thereupon moved that the question be referred back to the Committee to obtain plans from three local architects. Mr. Mortimer seconded, but ultimately Mr. Ball agreed to the matter being referred back with instructions to prepare a further report.

JOINT COMMITTEE ON MUNICIPAL TRADING.—At a sitting of the Joint Committee on Municipal Trading on Thursday of last week, the Earl of Crewe presiding, evidence was given by Mr. Cockerton, the Official Auditor of the London County Council, and Mr. Hartley, a member of the Bradford Town Council. Mr. Hartley said that he considered the most pressing form of municipal enterprise needed at the present time was the provision of houses for the working classes. In Bradford private enterprise had entirely failed in the matter of providing the cheapest class of house, and the Municipality was the only body that could properly deal with the problem. He thought that sixty years would be a reasonable term to allow for loans for building purposes.

PROPOSED REFUSE DESTRUCTOR AT GORTON, MANCHESTER. — Colonel R. A. Durnford, R.E., Local Government Board inspector, held an inquiry on the 9th inst., at the Gorton Town Hall, into an application by the Gorton District Council for sanction to borrow 8,816*l.* for the provision of a refuse destructor on a site adjoining the Gorton outfall sewage works. The site is between 400 and 500 yards from the Belle Vue Gardens, and Mr. Charles Jennison opposed the application because of its proximity to the gardens. The inspector afterwards inspected the site and said the result of the inquiry would be intimated in due course.

GASWORKS, STRABANE.—On the 9th inst. a Local Government Board inquiry was opened in the Town Hall, Strabane, by Mr. A. D. Price, Engineering Inspector, for the purpose of hearing an application for a loan of 15,000*l.* for the erection of new gasworks made by Strabane Urban Council, and also for a loan of 240*l.* in respect of the acquisition of a house for James M'Gillion under the Small Dwellings Act. Mr. Charles Hunt, M.Inst.C.E., gave evidence as to the sufficiency of the estimate, and explained the system intended to be introduced. He was sure the result would be most successful.

METROPOLITAN CATTLE MARKET. — At their meeting on June 19 the Court of Common Council had before them a scheme for the rearrangement and partial rebuilding of the Cattle Market at an estimated outlay of some 50,000*l.* The cattle market at West Smithfield was abolished in pursuance of a Report made by a Commission of Inquiry, 1849, into the Meat Supply of the Metropolis, and on June 13, 1855, was opened (by Prince Albert) the present market, which had been laid out, at an expenditure of about 500,000*l.*, on an area of 15 acres at Copenhagen Fields, Islington, after plans and designs prepared by J. B. Bunning, the City Architect, and illustrated in our issue of December 2, 1854. From a financial point of view the market, it appears, has not proved a very profitable undertaking. In December, 1896, the Corporation of the City of London sold for 16,000*l.* to the Islington Vestry, for purposes of an open space and recreation ground, some of the surplus lands, consisting of about 5½ acres, lying on the south side of the market area, and in that same year introduced a Bill in Parliament for powers to set apart spaces upon the estate for the temporary use of vendors of goods and miscellaneous commodities, and to levy tolls and charges in respect of such goods and the use of the spaces allotted to their sale. The central clock tower marks the site of Copenhagen House, a favourite resort of holidaymakers, which is named "Coopen-hagen" in the map in Gibson's edition, 1695, of Camden's "Britannia," and is depicted in a woodcut on columns 857-8 of Hone's "Every Day Book," Vol. I. The fields lay between Maiden-lane, now York-road, and the old bridle-way, Hagbush-lane, since Caledonian-road. The house was pulled down in April, 1853; its name survives in Copenhagen-street.

THE COLISEUM, ST. MARTIN'S-LANE, WESTMINSTER.—At the meeting of the London County Council on Tuesday, the Theatres and Music Halls Committee reported as follows:—"We have considered plans submitted by Mr. F. Matcham, on behalf of Mr. Oswald Stoll, of a building, to be known as the Coliseum, which it is proposed to erect upon the site of houses abutting upon St. Martin's-lane, Bedfordbury, and May's-buildings. Part of the site was formerly a public thoroughfare (Turner's-court), but we are informed that this court was closed by a magistrate's order made on April 19, 1902, under the provisions of the Housing of the Working Classes Act, 1890, on the representation of the Westminster City Council. It was reported to the Statistical Sub-Committee of the Housing Committee that, in connexion with the clearing of this site, 357 persons of the working class had been or would be displaced, and this information having come to our knowledge we adjourned the consideration of the plans to ascertain what steps the applicants proposed to take to provide for the rehousing of these persons. Mr. Matcham thereupon stated that his client had transferred to the Westminster City Council in return for the surrender of the public rights over Turner's-court land and property to the value of 25,000*l.*, and that in addition to this he had paid 5,000*l.* as a contribution to the funds of the City Council for the purpose of street widenings in the district. He further stated that his clients had authorised him to undertake that they would assist in the widening of Chandos-street, already suggested by the Westminster City Council, by setting back the portion of the building in that street to the new frontage-line approved by the Council and the City Council, by which a minimum width of 45 ft. will be provided for Chandos-street, and that, in the circumstances, his clients thought that he had done all that could be expected of him. The scheme, moreover, appears to be one which will result in a very desirable public improvement. The building is shown to accommodate 2 939 persons (including standing room), and the plans are satisfactory from the point of view of the theatre regulations. We have also been informed that there is no objection under the Building Act. We regret that it does not appear possible for the Council to require steps to be taken for rehousing the persons displaced, and we recommend 'That Mr. Matcham be informed that . . . the Council will be prepared to grant a certificate. . . . '" This was agreed to.

BLACKPOOL TECHNICAL SCHOOL COMPETITION.—The firm of architects who received the first premium in this competition write: "We notice that in announcing the award for the Blackpool Technical School Competition you give our name as Potts, Son, & Pickup. We should be much obliged if you would correct this in your next issue, as the name of our firm for some years now has been Potts, Son, & Hennings." The mistake was not ours.

GASWORKS, MANCHESTER.—Colonel A. G. Durnford, an Inspector of the Local Government Board, held an inquiry in the Mayor's Parlour, at the Manchester Town Hall, on the 10th inst., into an application for sanction to borrow a sum of 253,570*l.* for purposes of the Corporation gas undertaking. Mr. J. G. Newbigging, the Chief Engineer, stated that the increase in the demand for gas during the past five years was equal to 8½ per cent. After hearing other detailed evidence the Inspector closed the inquiry and visited the different gasworks of the city.

LEGAL.

ARCHITECTS' CHARGES.

AT the Lincolnshire Assizes recently, Messrs. W. Watkins & Son, architects, Lincoln, claimed damages from Messrs. Curtis & Mawer, house furnishers, Lincoln, for professional services. The defendants had their premises enlarged, at a cost of 6,756*l*, but ceased to employ the plaintiffs when the work was commenced. The plaintiffs, therefore, charged 2½ per cent. for their plans, and 1½ per cent. for getting out the quantities, minor extras bringing the total to 289*l.* 11s. 9d.—For the defence, it was urged that the three Messrs. Mawer went to plaintiffs, and distinctly asked what was the exact amount they would charge if engaged, and if in answer to a question like that, they said 4 per cent., it was not fair for them to turn round afterwards, and say they were keeping another 2½ per cent. up their sleeves.—The jury found for the plaintiffs, and judgment was entered accordingly. — *Sheffield Telegraph.*

LITIGATION OVER WORCESTER'S SEWAGE SCHEME.

THE case of the King *v.* the Corporation of Worcester came before a Divisional Court of King's Bench, composed of Justices Wills and Channell, on the 13th inst., on a rule calling upon the Corporation to show cause why a return to a peremptory writ of mandamus for the carrying out of a sewage scheme should not be taken off the file of the Court, and calling upon each member of the Corporation individually to show cause why a writ of attachment should not issue against them for disobedience to the writ of mandamus which the Local Government Board had obtained in July, 1897, and which had been served on ten of the then members of the Corporation. The present rule was obtained in March last, and that, with the copy of the writ of mandamus, was served on the forty-eight then members of the Corporation. Of the ten members of the Corporation originally served with the writ of mandamus only seven were members in March, at the time of service of the rule with the copy of the writ. The return to the writ of mandamus was that the Corporation were carrying out a sewage scheme, as commanded, and that a contract for the execution of the works had been entered into.

At the conclusion of the arguments of counsel their lordships ordered that as regards the seven members of the Corporation the writs of attachment should be made absolute, but would lie in the office until November 15 to give them an opportunity of applying for a further stay on the ground that they had taken the necessary steps showing they were prepared to obey the order of the Court. The order as regarded the forty-one other defendants would stand over until that date.

Mr. Justice Wills, however, warned these forty-one defendants that they would stand in great peril if they did not take proper steps to prove there would be no more delays.

The Attorney-General, the Solicitor-General, and Mr. Sutton appeared in support of the rule; Mr. Willis Bund for the Corporation; and Mr. Macmorran, K.C., and Mr. J. B. Matthews for the individual members of the Corporation.

ACTION AGAINST THE CHICHESTER CORPORATION FOR NUISANCE.

MR. JUSTICE CHANNELL, in the King's Bench Division on the 11th inst., had mentioned to him the case of Lord Gifford *v.* the Mayor and Corporation of Chichester on an adjourned summons arising out of Lord Gifford's action against the defendants in respect of a nuisance in connexion with their outfall works at Bosham, close to the plaintiff's residence at Old Park. On May 23 last the plaintiff asked that a day might be fixed for final completion of the works being carried out by the defendants to remedy the nuisance, an injunction having been granted restraining the defendants from continuing the nuisance; but there was a stay of execution pending the construction of the works in question. The defendants alleged that the work had been substantially completed, it only remaining for them to have several hundred tons of shingle delivered. The summons was adjourned by his Lordship for six weeks on the understanding that if the plaintiff was satisfied with the progress of the works it should not be brought on again.

Mr. Wills, for the plaintiff, now said that while the application of May 23 had had a magical effect, the nuisance had not yet been remedied. Instead of employing only seven barges, the defendants now had fourteen engaged in the work, and the average deliveries of shingle had increased from 500 tons per week to 730 tons. Between 800 and 900 tons still remained to be delivered, and the plaintiff's contention was that although there had been considerable improvement the work should have been completed by this time. At the present rate of delivery the shingle ought to be delivered within a week, and he (counsel) suggested that his lordship should now make an order for the works to be completed within a fortnight.

Mr. Boxall, K.C., for the defendants, said that the defendants still wanted 1,500 tons of shingle, and asked that the application should stand over for six weeks.

His Lordship said that the injunction would be further suspended for three weeks, and at the end of that time the plaintiff would be entitled to proceed against the defendants by way of sequestration, or otherwise, if he then alleged that the nuisance existed. He did not want to encourage such proceedings, but he made the order with the view of keeping up the compulsion on the defendants, which had been the only thing that had started them into anything like activity.

Order accordingly.

ACTION AGAINST THE TICEHURST RURAL DISTRICT COUNCIL.

THE case of Pakenham *v.* The Ticehurst Rural District Council, came before Mr. Justice Buckley in the Chancery Division on the 10th and 11th insts. This was an action brought by the plaintiff, Sir Francis John Pakenham, K.C.M.G., against the defendants, to obtain a declaration that certain pipes and ditches on the plaintiff's estate at Burnhurst, Hurst Green village, were vested in the defendant Council, and that they should be ordered to cover them so as to prevent their becoming injurious to health.

Mr. S. O. Buckmaster, K.C., and Mr. Geo. Lawrence appeared for the plaintiff; and Mr. J. M. Astbury, K.C., and Mr. R. J. Parker for the defendants.

In opening the case counsel stated that the plaintiff was the owner of the estate through which the system of drainage passed, and he had owned the estate for some time, but he did not go into residence there until June, 1902. After that date he discovered that the smells from the system of drainage were exceedingly offensive and injurious to health. Complaints were made in consequence. There was a cesspool on the estate, which received the sewage from several buildings which were not on the estate as well as from the Queen's Hotel.

Mr. Astbury interposed, and observed that the pipe which drained into the cesspool and the overflow pipe from the cesspool could not be a sewer within the meaning of the Act. The defendants neither made the cesspool nor the connexions. The plaintiff had chosen to connect the cesspool with a ditch on his estate, and he must take the consequences. The defendants did not make the ditches on the plaintiff's land; and if the plaintiff did not like the prevailing system he must alter it himself.

Evidence was then called on behalf of the plaintiff as to the character of the water taken from the ditch, Dr. Stevenson, the official analyst to the Home Office, producing samples of the water, which he described as being highly concentrated and very offensive.

Mr. Astbury, on behalf of the defendant, said that they could not have a sewer where there was no outfall. For a sewer they must have something which took the sewage away. In this case there was a stoppage at the point marked "S" on the plan and only a small amount of liquid could pass the little pipe at "S," then sank into the ground and deodorised. A hundred yards past the point marked "T" the sewage entered a stream which did not belong to the plaintiff at all. That was a trespass which could be stopped.

Evidence was called on behalf of the defendants to the effect that sink water was seen running through one ditch which caused a nuisance and that the cesspool overflowed, which was an infringement of the by-laws.

In the result, his Lordship held that the plaintiff had failed on a small point of the case to prove that the open drains were sewers, but had succeeded on the greater point of the case in showing they were sewers. He awarded the plaintiff 10s. nominal damages and defendants would have to pay the plaintiff two-thirds of the costs of the action.

Judgment accordingly.

PAVING EXPENSES IN STOKE NEWINGTON.

THE case of Bull *v.* the Mayor, &c., of Stoke Newington came before a Divisional Court of King's Bench, composed of the Lord Chief Justice and Justices Wills and Channell, on the 14th inst., on the appeal of Mr. Bull from an order of the magistrate holding that he was liable to pay the apportionment charges in connexion with the paving of a road in the district of Stoke Newington. The question at issue was whether there was a taking-over of the road by the respondents, the then District Board in 1869 having received a payment or payments from the then owners, and made up the roads and paths. The magistrate found that there was a want of jurisdiction on the part of the then Board in 1869, and also in 1881, and that the appellant was now liable to the respondents for the paving charges under their order of apportionment. It was argued for the appellant that the respondents' resolutions in 1902 adopting the road and ordering it to be paved, and apportioning the charges for the same were inoperative, having regard to the previous resolution and action of the District Board.

At the conclusion of the arguments of counsel, the Lord Chief Justice, in giving judgment, said that the facts were peculiar, and there was no general decision on the point raised before the Court. There were certain lines of authority well known. If the Local Authority had taken definite action and thereby treated a certain street as a new street, or taken it over so that it became repairable by the public authority, then it could not be treated as a new street so as to put upon the frontagers the cost in accord with the decision of the cases on the record. Another line of cases went to show that, although the Local Authority might have done certain repairs under the Public Health Act or the Metropolis Management Act, it did not follow that the street became a new street and a subsequent apportionment could be enforced. Then there was the further question, When did a street become a new street? The magistrate found in this case as a fact that the street became a new street in 1891, and not till then. He also found as a fact that the apportionment proceedings by the District Board in 1869 and 1881 were abandoned. His Lordship did not think that the Court ought to send the case back to the magistrate, as it was of opinion that the magistrate had the whole of the facts and documents before him when he came to the conclusion that he did come to. If the proceedings in the past were abandoned so that the street did not become a new street, and the then Local Authority did nothing, then the decision was right. This Court was of opinion that the magistrate's finding that the former apportionment proceedings were abandoned was right, and the appeal would, therefore, be dismissed.

Justices Wills and Channell concurred.

ACTION AGAINST THE KEYMER BRICK AND TILE CO.

MR. JUSTICE JOYCE in the Chancery Division on the 14th inst. concluded the hearing of the case of the Attorney-General (at the relation of the Chailey Rural District Council) *v.* The Keymer Brick and Tile Co., Ltd.

This action was brought for an injunction to restrain the defendants from committing or permitting a nuisance arising from the accumulation of house refuse of an offensive character on their land at Ditchling, in Sussex.

His lordship, after hearing the evidence, in giving judgment, held that the plaintiff was entitled to the relief sought. He accordingly granted a perpetual injunction against the defendants, their contractors, servants, and agents restraining them from unloading, or bringing, or causing to be brought, or permitting to be deposited, any filth, dust, rubbish, night soil, or refuse, or other noxious or offensive matter, upon the land in question so as to occasion any nuisance, or annoyance, or injury to the health of the public.

Mr. Macmorran, K.C., Mr. Younger, K.C., and Mr. Redcliffe appeared for the Attorney-General; and Mr. Hughes, K.C., Mr. Marshall Hall, K.C., and Mr. Mathold for the defendant company.

PATENTS OF THE WEEK:

APPLICATIONS PUBLISHED.*

16,300 of 1902.—J. KULHANEK: *Transportable Buildings.*

The method of constructing semi-permanent and transportable buildings essentially characterised by the fact that the separate portions or panels of the wall, that is to say, those portions which lie between the joint with another wall and window or door aperture, or the foundation and the window openings, or the window or door openings, and the roof, are constructed of connected plates, preferably provided of artificial stone of suitable kind, upon which the uprights for the reception of the windows or doors, and the casings for the same, are permanently fixed in such a manner that, upon the connexion of the respective panels, the door or window uprights and casings also appear to be jointed together, so that for the completion of the door or window it is only necessary to hang the same in the casing.

18,537 of 1902.—T. BAMFORTH and A. ROBERTSON: *Vent Dampers of Kitchen Ranges.*

In a kitchen range a vent damper plate having the slide guides around the vent opening formed as an integral part thereof by bending or doubling the edges of the plate, in conjunction with a sliding damper having its edges similarly formed to engage with the said slide guides.

18,967 of 1902.—J. J. JAMES: *Catches or Fastenings for Doors, Windows, and the Like.*

An automatic fastener for doors, French-windows, casements and the like, consisting of a catch having a hook-like engaging part, and eccentrically pivoted to a horizontally-disposed bracket or carrier plate, combined with a vertical peg or projection, one of the said parts being mounted upon the inside of the door or the like, whilst the other is fixed to the door frame, or its equivalent, in such a manner that on the door being fully closed, the peg or projection will act upon the parts of the catch at points beyond the centre, and thereby cause the hooked part thereof to engage behind the peg or projection, and thus fasten the door or the like; means being provided for the movement of the catch in the reverse direction by hand when the door requires to be unfastened.

19,087 of 1902.—F. STUMPF: *Fasteners for Doors and the Like.*

A safety door fastener having a bolt which slides in a catch during the opening of the door, said catch being spring actuated and movable in the direction of the door movement and a fixed guide attached to the door post.

22,201 of 1902.—T. R. P. PLUMBER: *Ball Valves for Flushing and Other Water Cisterns.*

In a flushing cistern a valve consisting of a ball that will float upwards when forced from its seat under the water and a suitably formed cage to hold the ball so as to secure its return to its seat when the water level falls, the cage being so constructed that part of it can be pulled up, the ball being raised from its seat by a ring or projections under it, which ring or projections are moved by a lever or other means.

28,211 of 1902.—I. LIGHTER: *Mortising and Tenoning Machine*

In a mutually operated mortising and tenoning machine a base, having a fixed standard thereon, a reciprocating plunger mounted in bearings on said standard, and an oscillatory fulcrum-post at one side of the standard, and a feeding device connected with, and actuated by, the fulcrum-post.

2,837 of 1903.—H. HOTZ: *Hinge Fittings for Doors, Windows, and the Like.*

Hinge fittings for doors, windows, and the like, comprising a slotted socket, in the interior of which a lever is disposed, which is turnable on an axis, and one end of which is weighted by a ball, which enters a cavity in a ring or the like after said ring is inserted into the slot.

6,361 of 1903.—W. MULLER: *Mitering, Mortising and Tenoning Machines.*

A mitering, mortising, and tenoning machine having a circular saw mounted on a shaft with suitable adjustment behind, vertically adjustable rotary cutters, and a vertically, horizontally, and angularly adjustable work holder, provided, if desired, with a scale for angular adjustment.

8,996 of 1903.—W. W. MACLAY: *Continuous Burning Portland Cement Kilns.*

A continuous burning Portland cement kiln, comprising a shaft like structure having openings at the bottom and provided with a combustion chamber, a throat above said combustion chamber, and a pre-heating chamber above said throat, in combination with a regulable suction device connected with said pre-heating chamber, and with a valve or damper located between said pre-heating chamber and the top of the kiln, so that the draft exerted through the combustion-chamber by the suction device may be regulated by adjusting the said damper.

9,134 of 1903.—L. DIENELT: *Flushing Cisterns.*

A flushing cistern with fixed siphon, in which the siphoning is effected by renewed inlet of water and by the overflowing of the same into the draw-off pipe, characterised by the fact that the double valve which is normally held closed by the float ball lever allows of the inlet of the water by means of a bent lever, the latter pressing down the float ball lever, and that the water rising in the bell overflows into the draw-off pipe, thus effecting the emptying of the cistern.

9,491 of 1903.—L. G. LEFFER: *Double-walled Furnaces.*

A double-walled furnace in which air for combustion is admitted through an opening at the top of the rear wall, and, passing downwardly, divides and passes upwardly about the remaining surface of said wall and then passes to the side walls, the inner plates of which are corrugated and inclined, the air so heated finally passing through lower openings to the grate.

9,677 of 1903.—C. E. LONG: *Fasteners for Windows and the Like.*

In fasteners for windows and the like, having a pivoted arm carried by the first frame or member and adapted to receive angular motion, to interlock or grip a segment or equivalent engagement device upon a plate carried by the second frame or member; forming or fitting the segment carrying plate with a key operated lock, and forming a lock bolt-hole in the pivoted arm, so that when in its engaged position the lock bolt-hole of the arm will be located above the bolt of the lock, whereby on operating the key-operated lock the pivoted arm is secured against unwarranted operation from either the exterior or the interior of the windows or the like.

9,686 of 1903.—P. LIEVENS and G. JAHN: *A Safety Apparatus for the Prevention of Burglary.*

A safety apparatus against burglary applicable to any door, shutter, window, or other means of closure, consisting in a detonator or other alarm-signal, the percussion apparatus of which is held back by a hook at the time of closing the door, said hook being thrown back by an angle piece fixed on the door frame, and thus holding the percussion apparatus and letting it go at the time when the door is opened; in combination with a bolt which moves forward or remains motionless according to the position of a secret mechanism, for preventing or allowing an alarm signal to sound.

11,043 of 1903.—J. BOHLEN, G. A. WRIGHT, and F. E. HOOD: *Sash Fasteners.*

A sash fastener comprising a casing with an inwardly projecting intermediate stop, inwardly projecting flanges between the said stop and one end of the casing, and a spring-actuated bolt slidingly mounted in the said casing, and having an elliptical enlargement, with opposite notches to engage the said flanges and hold the bolt retracted, the opening between the flanges and the elliptical enlargement being of such relative dimensions as to permit the said enlargement to be drawn through the opening when the bolt is properly turned.

23,811 of 1902.—E. CUMMINGS: *Chimney Cowls and Ventilators.*

This invention relates to improvements in chimney cowls and ventilators, and consists in forming over the top of the usual hollow stem of the cowls a series of cones, and providing angular air-chambers, or suction valves, in and around the cones to create a great up draught and prevent any down draught.

8,467 of 1903.—T. POTTERTON: *Kitchen Ranges and Boilers therefor.*

This invention relates to improvements in kitchen ranges and boilers, and consists of two grates and a boiler constructed in independent sections, which are inter-connected to maintain an efficient circulation of water. The lower of the two grates is surrounded by sections of the boiler. The flue for both grates is zigzag, and runs between the back and front parts of the upper boiler.

18,005 of 1902.—E. R. STONE: *Life-saving and Salvage Apparatus for Buildings.*

Life-saving and salvage apparatus comprising a track adapted to be fixed upon the front of a building or buildings above the highest point to which access is to be afforded, a runner or carrier mounted upon the said track and carrying a ladder extending to the ground, means for traversing the said runner or carrier with the ladder and means for securing the lower end of the said ladder.

18,443 of 1902.—G. DALTON: *Machines for Crushing Stones, Ores, and the Like.*

This consists in the arrangement and combination on a straight or bent rocking toggle or lever, having at the end thereof opposite to the head or boss a rectangular slot through the same, provided with a thrust block at one side and an adjustable wedge piece at the opposite side and formed in the lower part below an eccentric as an oil-well bath with the said eccentric on the driving or actuating shaft working in said slot.

* All these applications are in the stage to which opposition to the grant of Patents upon them can be made.

6,411 of 1903.—W. H. WHEATLEY (F. BILLET): *Means for the Removal of Dust from the Interior of Buildings.*

Purifying the interior of buildings by brushing, rubbing, and beating the walls, partitions, and surfaces of the said places, and the furniture and objects appertaining thereto, and at the same time drawing off by suction the air which is thus charged with dust and germs, and filtering this dust-charged air by passing it through dry or wet filtering substances.

3,483 of 1903.—F. KRUGER and J. DENKELMANN: *Manufacture of Fireproof Bricks or Material.*

The manufacture of fireproof artificial stone, bricks, blocks, or material consisting in adding a mixture of finely-ground waste of specular gypsum, or other unburnt gypsum, and a small proportion of finely-ground asbestos or soapstone to a heated liquid mass of silicate of soda or potash, and mixing the whole until a thoroughly homogeneous mass is obtained, charging moulds with the same and heating them to a red heat.

5,757 of 1903.—T. O. BARRETT: *Method of and Means for Jointing Earthenware and other Pipes or Tubular Connexions.*

In jointing earthenware and like pipes the combination of an internal screw threaded, serrated, or corrugated socket having radial holes with a freely fitting spigot having external screw threads, serrations, or corrugations.

6,076 of 1903.—P. T. SHIELDS: *Floors and Ceilings.*

The combination of the side walls and beams, anchors held to the said walls, tie-rods connecting the said beams and anchors, a filling held by the said beams and rods, flooring strips positioned upon the beams, a filling arranged between the said strips, and flooring boards arranged upon the said strips, leaving an air space between the boards and filling.

7,364 of 1903.—K. ZUCKER: *Cross Jointing of Iron Bars.*

The process of cross jointing iron bars of equal cross section, consisting in providing in the one bar or in the web of the one bar an aperture having a bridge or bridges with lateral slits below it, said aperture being of cross-section adapted to receive the second bar.

9,835 of 1903.—G. GEISSLER, SEN., AND G. GEISSLER, JUN.: *Process for the Manufacture of Cement.*

This consists in the manufacture of cement by burning or sintering the mixture of raw material, and subsequently granulating the product, and the employment of oxygen to aid the burning of the materials in the kiln or furnace.

10,176 of 1903.—H. H. WAINWRIGHT: *Metal Bound Concrete Kerbing.*

The combination in kerbing of a mass of concrete shaped to the face of the kerb, and a metal corner bar therefor inserted in said mass of concrete, and having a head positioned at the corner of said mass, an integral web extending longitudinally of said head and backwardly on the axial plane of said head, and connected with the sides of said head by obtusely angled lines and an integral longitudinal dovetail along the inner edge of said web, whereby said corner-bar is interlocked with said mass of concrete.

10,206 of 1903.—R. ILNEMANN: *Fireproof building blocks and slabs for walls, ceilings, partitions, and the like.*

In building blocks or slabs having one or more openings passing through them from top to bottom, the method of making the interior of the said holes in the form of one or more helical grooves or recesses, which become filled with liquid cement poured into the openings after the blocks or slabs have been fitted together.

10,235 of 1903.—C. A. BALPH; *Floor Constructions*

A floor construction comprising a beam or girder having a main bottom flange and one or more flanges or projections on the web longitudinal thereof, said flanges or projections being located on the lower half of the said web, and above the main flange of said beam or girder, and concrete embedding said beam or girder.

10,410 of 1903.—J. H. TURNER and G. M. REED: *Gully Traps.*

The application to gully traps of a grid capable of being locked in position.

17,567 of 1902.—T. JONES: *Bricks.*

A building brick having one or more of its faces moulded to represent roughly hewn rock.

17,618 of 1902.—C. RUBITSCHUNG: *Manufacture of Artificial Asphalt Stone or the like.*

A method of manufacture of a transportable stony material adapted to be made into artificial stone moulding or paving material by the use of heat and pressure, consisting in mixing a small quantity of preliminarily heated thin liquid tar, freed from ammonia water, with a multiple weight of more highly heated filling material, until a dry mortar that does not stain is produced, and thereupon energetically cooling the loose divided mixture and preventing the formation of lumps.

17,224 of 1902.—E. PARRY, F. W. BIDDER, and E. J. SCOWN. *Frames and Covers for Manholes and the Like in Pavements and Roadways.*

In manhole covers, supporting the cover by external brackets on internal stools or supports cast with the main wall of the frame and independently of the inner gutter wall, whereby the tilting of the cover is prevented, ample provision being made all round the cover for ventilating the manhole, and the use of a number of small holes which readily fill up with dirt is avoided.

17,377 of 1902: P. COTTANCIN and A. VYE-PARMINTER.—*Material for Reinforcing Concrete, Cement, and the Like, and the Application Thereof.*

For reinforcing concrete and the like, wire, rods, tubes, or chains bent into loops, spirals, curves, or helices, or combinations of these and set in the material to be reinforced.

MEETINGS.

SATURDAY, JULY 18.

St. Paul's Ecclesiological Society.—Visit to Chigwell, under the general guidance of Mr. R. Howard Wall. Leave Liverpool-street at 2.44 p.m., booking to Chigwell.

Incorporated Association of Municipal and County Engineers.—Lancashire and Cheshire District Meeting at Widnes and Runcorn.

JULY 20 TO 25.

The Architectural Association.—Annual excursion, Worcester and district.

TUESDAY to FRIDAY, JULY 21 to 24.

British Association of Waterworks Engineers.—Eighth Annual General Meeting, Bolton.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

July 3.—By GEORGE SYMONDS (at Diss).

Diss, Norfolk.—Walcott Hall Estate, 131 a. 2 r. 4 p., f.	£4,000
Three freehold cottages	155
Two freehold building plots	130
Shimpling, Norfolk.—Shimpling Place Estate, 237 a. 2 r. 18 p., f.	4,450
Bridge and Hill Farms, 53 a. 0 r. 25 p., f.	800
Five enclosures, 20 a. 0 r. 14 p., f.	460

By ALFRED PRESTON (at Diss).

Hinderclay, Suffolk.—The Grove Farm, 113 a. 0 r. 35 p., f. and c., p.	1,050

By HUNTER & HUNTER.

Tottenham.—Bruce-gr., freehold building land, 1 a. 3 r. 15 p.	2,400
Fulham.—493, Fulham-rd., e.r. 40*l.*; also i.g.r. 5*l.*, u.t. 50 yrs., g.r. 1*l.*	605
Shepherd's Bush.—34, St. Stephen's-av., u.t. 50 yrs., g.r. 10*l.*, y.r. 34*l.*	290
62, Westville-rd., f., y.r. 17*l.*	295

By THURGOOD & MARTIN.

Fleet-st.—Nos. 143 and 144, s., area 1,150 ft., f., y.r. 270*l.*	16,350
1, Hare-pl.; also The Mitre Tavern adjoining, area 1,225 ft., f., y.r. 320*l.*	9,550
Colne Engaine, Essex.—The Over Hall Estate, 161 a. 1 r. 25 p., f.	3,300

By TYSER, GREENWOOD, & CRIER.

Chiswick.—Burlington-la., Leamington Villa, f., e.r. 60*l.*	920
86, Paxton-rd., f., w.r. 33*l.* 16s.	405

July 4.—By SPELMANS (at Norwich).

Norwich.—23a, Distillery-st., f., y.r. 6*l.*	100
Marlingford, Norfolk.—Cottage, Post-office and 0 a. 2 r. 10 p., c.	110
Nine cottages and 1 a. 2 r. 38 p., c.	360

July 6.—By DENT, DALLAS, & Co.

Putney.—85, 87, 89, and 91, Fawe Pk.-rd., u.t. 91 yrs., g.r. 24*l.*, w.r. 174*l.* 4s.	850

By FULLER, MOON, & FULLER.

Battersea.—85, Battersea Pk.-rd., s., and 1, Savona-st., s., f., y.r. 66*l.*	550
Croydon.—11, 12, and 13, Princess-rd., f., y.r. 93*l.* 12s.	800

By P. & G. GEEN.

Peckham.—30, Talfourd-rd., f., y.r. 36*l.*	530
23 to 31 (odd) and 37, Albert-rd., f., y.r. 196*l.*	3,095
83, Commercial-rd., u.t. 40 yrs., g.r. 5*l.* 5s., w.r. 35*l.* 2s.	180

July 6.—By WM. HOUGHTON.

Romford, Essex.—Heath Park-rd., two freehold building estates, 32 a. 0 r. 5 p., f., p.	9,800
Brentwood-rd., a freehold building estate, 9 a. 1 r. 33 p.	2,800
Walthamstow.—St. Mary's-rd., The Coffee Tavern, f., p.	1,650
Old Charlton, Kent.—Nadine-st., a building site, f.	165
Church-la., a freehold building site	125
Church-la., a building site, 3 a., f.	680

By KING & CHASEMORE.

Newdigate, Surrey.—New House Farm, 107 a. 2 r. 26 p., f.	2,300
Duke's Wood, 100 a. 1 r. 36 p., f.	1,250
Charlwood, Surrey.—The Glover's Estate, 303 a. 1 r. 23 p., f.	6,900
Page Wood Estate, 60 a. 0 r. 17 p., f.	2,050
Welland Enclosures, &c., 31 a. 2 r. 29 p., f.	1,350
Newdigate, Surrey.—Enclosures of land, 33 a. 2 r. 9 p., f.	1,450
Cider Mill enclosures, 40 a. 3 r. 37 p., f.	1,100
Cider Mill Farm, 79 a. 0 r. 18 p., f.	3,425

By C. SPARROW & SON.

Finchley.—44, Percy-rd., f., w.r. 39*l.*	445
Woodhouse-la., Melrose, f., e.r. 60*l.*	850

By S. WALKER & SON.

Dormans, Surrey.—The Approach, The Lodge and 0 a. 0 r. 32 p., f.	170
Furzefield Chase, &c., five freehold plots of land, 19 a. 0 r. 21 p.	1,430
Furzefield Chase, carpenter's shop and yard, area 0 a. 1 r. 16 p., f., y.r. 10*l.*	100

By HOWKINS & SONS (at Rugby).

Swinford, Leicester.—Cattell's Farm, 55 a. 3 r. 5 p., f.	2,250
Cottage and enclosure, 3 a. 2 r. 25 p., f.	350
Shawell, Leicester.—Bull Close, 4 a. 1 r. 5 p., f.	230
Shawell Plot, 4 a. 1 r. 5 p., f.	107

By A. CECIL GRIMWADE (at Hadleigh).

Bildeston, &c., Suffolk.—The Bush Farm, 138 a. 3 r. 1 p., f.	2,050
Kersey, Suffolk.—Bridges Farm, 88 a. 3 r. 13 p., f.	£950
A freehold field, 8 a. 1 r. 22 p.	120
Hadleigh Hamlet, &c., Suffolk.—The Red House Farm, 160 a. 2 r. 37 p., f.	2,150
The Hollies Farm, 100 a. 2 r. 25 p., f.	1,530

By KEITH & SMITH (at Hadleigh).

Monks Eleigh, Suffolk.—The Bridge Farm 119 a., f. and c.	2,025

July 7.—DEBENHAM, TEWSON, & Co.

City of London.—2 and 4, Finsbury-st.; 11 to 16 Ropemaker-st.: 4, 5, and 6, White-st.; also the Moorgate Works, area 11,650 ft., u.t 990 yrs., g.r. 1,453*l.*, y.r. 4,580*l.*	44,000

By CLARKE & Co.

Kensington.—7, 9, 11, and 13, Fairholme-rd., u.t. 69 yrs., g.r. 36*l.*, e.r. 208*l.*	1,440

By C. W. DAVIES & SON.

Islington.—24, Upper-st. (s.), f., e.r. 160*l.*	2,580
Caledonian-rd.—36, Edward-sq., u.t. 37 yrs., g.r. 5*l.*, w.r. 46*l.* 16s.	280

By PHIBBS GIBSON.

Belvedere, Kent.—Belvedere Pk., Temple Mount and 1 a., f., e.r. 80*l.*	1,000
Ealing.—1, 1a, 2, and 2a, Oxford-ter., f., w.r. 106*l.* 12s.	925

By HAMPTON & SONS.

South Kensington.—37, Thurloe-sq., u.t. 24 yrs., g.r., &c., 19*l.* 10s., p.	1,760
Surbiton Hill, Surrey.—Langley-av., Fairholme and ½ a., f., p.	2,980

By HARDS & BRADLY.

Greenwich.—20, London-st. (s.), y.r. 58*l.*	1,085
Dartford, Kent.—Barham-rd., f.g.r. 23*l.*, reversion in 88 yrs.	550
Lewisham.—33 and 35, Dermody-rd., f., y.r. 70*l.*	1,030

By PERCIVAL HODSON.

New Southgate.—Belle Vue-rd., f.g.r. 18*l.*, reversion in 76 yrs.	440
Holly Pk.-rd., f.g. rents 30*l.*, reversion in 76 yrs.	750

By LESLIE MARSH & Co.

Kensington.—6, Bolingbroke-rd., u.t. 83 yrs., g.r. 12*l.*, e.r. 65*l.*	600
South Kensington.—50, Warwick-rd., u.t. 83 yrs. g.r. 18*l.* 18s., e.r. 110*l.*	800

By WALTON & LEE.

Tooting.—Totterdown-st., a block of freehold building land, 13 a. 1 r. 29 p.	20,350

July 8.—By CHETWYND, LLOYD, & DEAN.

Brondesbury.—43, Buckley-rd., u.t. 84 yrs., g.r. 10*l.* 10s., y.r. 65*l.*	700
Finsbury Park.—40 and 42, Gillespie-rd., u.t. 63 yrs., g.r. 12*l.*, y.r. 68*l.*	545

By FLICK & SON.

Mile End.—6, 7, 1, and 9, Silas-st., u.t. 64 yrs., g.r. 14*l.*, w r. 135*l.* 4s.	930

By MAY & ROWDEN.

St. James.—1A, King-st. (business premises, &c.), u.t. 40¾ yrs., g.r. 65*l.*, y.r. 300*l.*	5,700

By RUSHWORTH & STEVENS.

Belgravia.—11, West Halkin-st. (s.), u.t. 25½ yrs., g.r. 20*l.*, y.r. 250*l.*	2,400
South Kensington.—9, Pelham-cres., u.t. 9¾ yrs., g.r., &c., 10*l.* 5s., y.r. 110*l.*	500
20, Pelham-cres., u.t. 15½ yrs., g.r., &c., 14*l.*, p.	730
Milborne-gr., u.t. 28 yrs., g.r. 5*l.* 10s., y.r. 55*l.*	500
Hendon.—16, 18, and 20, Pollard-rd., u.t. 77½ yrs., g.r. 13*l.* 10s., w.r. 80*l.* 12s.	405
Stoke Newington.—Carysfort-rd., f.g.r. 8*l.*, reversion in 88¼ yrs.	205
Coulsdon, Surrey.—Fairdene-rd., f.g.r.'s 21*l.*, reversion in 97½ yrs.	480

By TERSON & SON.

Tottenham.—4 to 12 (even), Victoria-cres., s., also stabling and premises in Russell-rd., u.t. 73 yrs., g.r. 47*l.* 7s., y.r. 222*l.*	1,590
Finsbury Park.—10, Alexandra-rd., u.t. 70 yrs., g.r. 12*l.* 12s., p.	460
Crouch Hill.—No. 15, s., u.t. 85 yrs., g.r. 6*l.*, w.r. 76*l.* 16s.	650

By WOOTTON & GREEN.

Stamford Hill.—Seven Sisters-rd., f.g.r. 28*l.*, reversion in 73 yrs.	660
Harringay.—73, Rosebery-gdns., u.t. 96 yrs., g.r. 6*l.* 6s., e.r. 32*l.*	250

By DOUGLAS YOUNG & Co.

Brixton.—92, Dalyell-rd., u.t. 61 yrs., g.r. 6*l.* 6s., w.r. 66*l.* 6s.	350
Wandsworth.—51, Eglantine-rd., f., y.r. 38*l.*	620

By MADDISON, MILES, & MADDISON (at Yarmouth).

Caister, Norfolk.—Denmark House and ½ a., f.	800
Freehold house and builder's premises, y.r. 15*l.*	288
Five copyhold cottages	190

By Messrs. BALLS (at Braintree).

Finchingfield, Essex.—Hobtoes Farm, 40 a. 0 r. 12 p., f.	480
Locksmith's Farm, 102 a. 1 r. 4 p., f.	1,160
Stambourne, Essex.—Two freehold fields, 24 a. 0 r. 15 p.	365
Hempstead, Essex.—Three enclosures, 19 a. 0 r. 36 p., f.	210
Prentices Farm, 77 a. 1 r. 11 p., f.	600
A freehold occupation, 5 a. 0 r. 5 p.	205

July 9.—By H. J. BLISS & SONS.

Clerkenwell.—35, St. John's-la., s., f., y.r. 45*l.*	760
Stepney.—32 to 40 (even), Eastfield-st., and 57a, Aston-st., f., w.r. 152*l.* 2s.	1,350
48, Eastfield-st., s., and 70 and 72, Aston-st., f., w.r. 118*l.* 6s.	1,000
Hackney.—49 to 57 (odd), Brunswick-st., with three workshops in rear, u.t. 56 yrs., g.r. 100*l.*, w.r. 481*l.* 10s.	2,650
Stratford.—16 to 32 (even), Mortham-st., u.t. 66½ yrs., g.r. 27*l.*, w.r. 198*l.* 18s.	1,100
Holloway.—Seven Sisters'-rd., f.g.r. 48*l.*, reversion in 27 yrs.	2,825
Battersea.—St. John's Hill, f.g.r. 36*l.* 10s., reversion in 50 yrs.	1,030
New Southgate.—Friern Barnet-la., f.g.r. 9*l.*, reversion in 55½ yrs.	220
Leyton.—Beaumont-rd., f.g.r. 30*l.*, reversion in 64 yrs.	670
Dalston.—2, Mayfield-rd., s., u.t. 14 yrs., g.r. 3*l.*, y.r. 32*l.*	18
Hackney.—3 to 8, Morpeth-rd., with plot of land in rear, u.t. 22 and 27½ yrs., g.r. 36*l.* 6s., w.r. 213*l.* 12s.	850

By CANE & Co.

Peckham.—56 to 62 (even), Kirkwood-rd., u.t. 67 yrs., g.r. 14*l.*, w.r. 124*l.* 16s. 8d.	1,040

Peckham—40, 42, 44, and 48, Parkstone-rd., u.t. 61 yrs., g.r. 21*l.*, w.r. 166*l.* 8s. £940

By EDWIN EVANS.

Feltham Hill, Middlesex.—Poplar Farm, 91 a. 3 r. 7 p., f. and c., y.r. 20*l.* 6,000

Notting Hill.—209, Ladbroke-gr., u.t. 62 yrs., g.r. 12*l.*, e.r. 80*l.* 510

Wandsworth.—102, Chatham-rd., f., e.r. 36*l.* 8s.. 72, Webb's-rd., u.t. 84½ yrs., g.r. 6*l.* 10s., y.r. 32*l.* 350

Battersea.—54, Northcote-rd. (r.), f., y.r. 60*l.* 580

167, Battersea-rise (s.), f., y.r. 60*l.* 985

Tooting.—76 and 78, Longley-rd., f. y.r. 54*l.* 760

Lambeth.—41, Cronier-st., u.t. 28½ yrs., g.r. 5*l.* 12s., w.r. 65*l.* 305

Balham.—107 and 109, Ramsden-rd., u.t. 63½ yrs., g.r. 11*l.* 5s., y.r. 60*l.* 590

By FAREBROTHER, ELLIS, & Co.

Strand.—Nos. 194, 195, and 196 (*Graphic* premises, &c.), area 4,000 ft., f., p. 63,000

By E. H. HENRY.

Streatham.—28, Riggindale-rd., u.t. 83½ yrs., g.r. 10*l.* 10s., e.r. 50*l.* 535

By NEWBON, EDWARDS, & SHEPHARD.

Clapton.—38, Clifden-rd., u.t. 83 yrs., g.r. 6*l.*, y.r. 32*l.* 290

136, Chatworth-rd. (s.), u.t. 76 yrs., g.r. 10*l.*, y.r. 65*l.* 475

Highbury.—38, Aberdeen-rd., u.t. 54½ yrs., g.r. 9*l.*, e.r. 50*l.* 415

Holloway.—23, Fonthill-rd, u.t. 62 yrs., g.r. 7*l.* 7s., e.r. 40*l.* 340

Chiswick.—60, Wellesley-rd., u.t. 63½ yrs., g.r. 6*l.* 12s., y.r. 40*l.* 330

1, 3, and 5, Blenheim-rd., u.t. 63 yrs., g.r. 12*l.*, y.r. 92*l.* 785

By NOTT, CARTWRIGHT, & ETCHES.

Pimlico.—130, Lillington-st., u.t. 23 yrs., g.r. 6*l.* 13s. 6d., y.r. 40*l.* 290

57, Upper Garden-st., u.t. 50 yrs., g.r. 20*l.*, e.r. 80*l.* 450

65, 67, and 69, Sutherland-st., u.t. 30 yrs., g.r. 24*l.*, w.r. 293*l.* 1,575

66, Westbourne-st., s., u.t. 17¾ yrs., g.r. 5*l.*, w.r. 65*l.* 490

Tooting.—97, Trevelyan-rd., u.t. 73 yrs., g.r. 4*l.*, w.r. 28*l.* 12s. 200

By STIMSON & SONS.

Old Kent-rd.—Nos. 114 and 176, s., f., y.r. 120*l.*.. 14 and 15, Massinger-st., f., w.r. 79*l.* 12s. 2,130

Brixton.—40, Overton-rd., u.t. 60 yrs., g.r. 13*l.* 16s. 3d., y.r. 65*l.* 735

41, Nursery-rd., u.t. 65 yrs., g.r. 4*l.* 10s., w.r. 33*l.* 16s. 440

Newington Causeway.—101 to 119 (odd), 108 to 126 (even), Rockingham-st., u.t. 19 yrs., g.r. 16*l.*, y.r. 566*l.* 12s. 255

Streatham.—73 and 75, Barrow-rd., u.t. 75¾ yrs., g.r. 18*l.* 18s., y.r. 90*l.* 800

Norwood.—37, 39, 41, and 43, Camden Hill-rd., u.t. 47¾ yrs., g.r. 24*l.*, y.r. 126*l.* 660

Brixton.—85, Angell-rd., u.t. 59 yrs., g.r. 7*l.* 10s., e.r. 55*l.* 570

Belvedere, Kent.—65, Woolwich-rd., f., e.r. 50*l.* .. By J. T. PEAT (at Redhill).

Charlwood, Surrey.—A building plot, 1 a. 3 r. 20 p., f. 125

Reigate, Surrey.—2, Hardwicke-rd., with workshop, forge, &c. 800

4, 6, 8, and 10, Hardwicke-rd.. f., e.r. 62*l.* 8s. .. July 10.—By P. J. DIXON & SON.

Islington.—120, Englefield-rd., u.t. 38 yrs., g.r. 7*l.*, e.r. 55*l.* 570

Bethnal Green.—Punderson's-gdns., a freehold building plot 215

By HOLLINGSWORTH & COLLYER.

Stepney.—25, 26, and 27, Maidmans-st., u.t. 40 yrs., g.r. 12*l.*, w.r. 135*l.* 4s. 800

By JONES, LANG, & Co.

Windsor, Berks.—29, High-st., s., f., y.r. 220*l.* .. 4,000

Fulham.—25, Winchendon-rd., u.t. 90 yrs., g.r. 7*l.*, y.r. 42*l.* 410

By SPENCER, SANTO, & Co.

Oxford-st.—82, Berwick-st., s., f., y.r. 250*l.* 5,765

Soho.—36, Frith-st. (warerooms), f., y.r. 270*l.* 6,110

By WEATHERALL & GREEN.

Shanklin, Isle of Wight.—Glenbrook and 2½ acres, u.t. 960 to 970 yrs., g.r. 60*l.* 10s., p. 2,250

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beer-house; p.h. for public-house; o. for offices; s. for shops.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 15 6	per 1,000 alongside, in river.
Rough Stocks and Grizzles.....	1 12 6	" " "
Facing Stocks....	2 12 0	" " "
Shippers	2 5 0	" " "
Fletton	1 8 6	" at railway depôt
Red Wire Cuts ..	1 12 6	" " "
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0 0	" " "
Best Blue Pressed Staffordshire ..	4 5 0	" " "
Do. Bullnose	4 12 0	" " "
Best Stourbridge Fire Bricks	4 8 0	" " "
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers.....	13 0 0	" " "
Headers	12 0 0	" " "

PRICES CURRENT (*Continued*).

BRICKS, &c.

	£ s. d.	
Quoins, Bullnose, and Flats.....	17 0 0	per 1,000 at railway depot.
Double Stretchers	19 0 0	" " "
Double Headers..	16 0 0	" " "
One Side and two Ends.....	19 0 0	" " "
Two Sides and one End	20 0 0	" " "
Splays, Chamfered, Squints.....	20 0 0	" " "
Best Dipped Salt Glazed Stretchers and Headers	19 0 0	" " "
Quoins, Bullnose, and Flats.....	14 0 0	" " "
Double Stretchers	15 0 0	" " "
Double Headers..	14 0 0	" " "
One Side and two Ends.....	15 0 0	" " "
Two Sides and one End	15 0 0	" " "
Splays Chamfered, Squints.....	14 0 0	" " "
Second Quality White and Dipped Salt Glazed	2 0 0	" less than best.

	s. d.	
Thames and Pit Sand	6 0	per yard, delivered.
Thames Ballast	6 0	" "
Best Portland Cement	30 0	per ton, delivered.
Best Ground Blue Lias Lime..	20 6	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime	11s 6d.	per yard, delivered.
Stourbridge Fire-clay in sacks	27s. 6d.	per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE — Including Farleigh Down, delivered on road waggons,	s. d.	
Paddington depôt.....	1 6½	per ft. cube.
Farleigh Down, delivered on road waggons, Nine Elms depôt	1 8½	" "
PORTLAND STONE (20 ft. average)—		
Brown Whitbed, delivered on road waggons, Paddington depot, Nine Elms depot, or Pimlico Wharf	2 1	" "
White Basebed, delivered on road waggons, Paddington depot, Nine Elms depot, or Pimlico Wharf....	2 2½	" "

	s. d.	
Ancaster in blocks	1 11	per ft. cube, deld rly. depôt.
Beer in blocks	1 6	" "
Grinshill "	1 10	" "
Darley Dale in blocks..	2 4	" "
Red Corsehill "	2 5	" "
Closeburn Red Freestone	2 0	" "
Red Mansfield "	2 4	" "

YORK STONE—*Robin Hood Quality.*

	s. d.	
Scappled random blocks	2 10	per ft. cube, deld. rly. depôt.
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per foot super. "
6 in. Rubbed two sides Ditto, Ditto	2 6	" "
3 in. Sawn two sides slabs (random sizes)..	0 11½	" "
2 in. to 2½ in. Sawn one side slabs (random sizes)	0 7½	" "
1½ in. to 2 in. ditto, ditto	0 6	" "

BEST HARD YORK—

Scappled random blocks	3 0	per ft. cube "
6 in. sawn two sides, landings to sizes (under 40 ft. sup.)	2 8	per ft. super. "
6 in. Rubbed two sides Ditto	—	" "
3 in. sawn two sides slabs (random sizes)	1 2	" "
2 in. self-faced random flags.....	0 5	" "

Hopton Wood (Hard Bed) in blocks	2 3	per ft. cube.
" " " 6 in. sawn both sides landings	2 7	per ft. super. deld. rly. depôt
" " " 3 in. do.	1 2½	" "

SLATES.

in. in.	£ s. d.	
20×10 best blue Bangor..	13 2 6	per 1000 or 1200 at ry. dep
20×12 " " " ..	13 17 6	" "
20×10 best seconds "	12 15 0	" "
20×12 " " "	13 10 0	" "
16×8 best "	7 0 0	" "
20×10 best blue Portmadoc	12 5 0	" "
16×8 best blue Portmadoc	6 5 0	" "
20×10 best Eureka unfading green....	15 2 6	" "
20×12 " "	17 2 6	" "
18×10 " "	12 10 0	" "
16×8 " "	10 5 0	" "
20×10 permanent green	11 0 0	" "
18×10 " "	9 5 0	" "
16×8 " "	6 19 0	" "

TILES.

	s. d.	
Best plain red roofing tiles..	42 0	per 1,000, at rly. depôt.
Hip and valley tiles....	3 7	per doz. " "
Best Broseley tiles	50 0	per 1,000 " "
Do. Ornamental Tiles 52	6	" " "
Hip and valley tiles....	4 0	per doz. " "
Best Ruabon Red, brown or brindled Do. (Edwards)	57 6	per 1,000 " "
Do. ornamental Do. 60	0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles.....	3 0	" " "
Best Red or Mottled Staffordshire Do. (Peakes)	51 0	per 1,000 " "
Do. Ornamental Do. 54	6	" " "
Hip tiles	4 1	per doz. " "
Valley tiles.....	3 8	" " "
Best "Rosemary" brand plain tiles 48	0	per 1,000 " "
Do. Ornamental Do. 50	0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 8	" " "

PRICES CURRENT (*Continued*).

WOOD.

	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.....	15 10 0	16 10 0
Deals: best 3 by 9.....	14 10 0	15 10 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.....	11 10 0	12 10 0
Battens: best 2½ by 6 and 3 by 6 ..	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best
Battens: seconds	0 10 0	" " "
2 in. by 4 in. and 2 in. by 6 in. ..	9 0 0	9 10 0
2 in. by 4½ in. and 2 in. by 5 in. ..	8 10 0	9 10 0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0 10 0	more than battens
¾ in.	1 0 0	"

	At per load of 50 ft.	
Fir timber: Best middling Danzig or Memel (average specification	4 10 0	5 0 0
Seconds	4 5 0	4 10 0
Small timber (8 in. to 10 in.)	3 12 6	3 15 0
Small timber (6 in. to 8 in.).....	3 0 0	3 10 0
Swedish balks	2 15 0	3 0 0
Pitch-pine timber (30 ft. average)..	3 5 0	3 15 0

JOINERS' WOOD.

White Sea: First yellow deals,	At per Standard.	
3 in. by 11 in.....	23 0 0	24 0 0
3 in. by 9 in.	21 0 0	22 10 0
Battens, 2½ in. and 3 in. by 7 in.	17 0 0	18 10 0
Second yellow deals, 3 in. by 11 in.	18 10 0	20 0 0
" " 3 in. by 9 in.	17 10 0	19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	15 10 0	16 10 0
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	12 10 0
Petersburg: first yellow deals, 3 in. by 22 in.	21 0 0	22 10 0
Do. 3 in. by 9 in.....	18 0 0	19 10 0
Battens.....	13 10 0	15 0 0
Second yellow deals, 3 in. by 11 in.....	16 0 0	17 0 0
Do. 3 in. by 9 in.	14 10 0	16 0 0
Battens.....	11 0 0	12 10 0
Third yellow deals, 3 in. by 11 in.....	13 10 0	14 0 0
Do. 3 in. by 9 in.	13 0 0	14 0 0
Battens	10 0 0	11 0 0
White Sea and Petersburg:— First white deals, 3 in. by 11 in.	14 10 0	15 10 0
" " 3 in. by 9 in.	13 10 0	14 10 0
Battens.....	11 0 0	12 0 0
Second white deals 3 in. by 11 in.	13 10 0	14 10 0
" " 3 in. by 9 in.	12 10 0	13 10 0
" " battens.....	9 10 0	10 10 0
Pitch-pine: deals	16 0 0	18 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—First, regular sizes ..	33 0 0	upwards.
Oddments	22 0 0	24 0 0
Seconds, regular sizes	24 10 0	26 10 0
Yellow Pine Oddments	20 0 0	22 0 0
Kauri Pine—Planks, per ft. cube..	0 3 6	0 4 6
Danzig and Stettin Oak Logs— Large, per ft. cube	0 2 6	0 3 6
Small " "	0 2 3	0 2 6
Wainscot Oak Logs, per ft. cube..	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 7	0 0 8
¾ in. do. do.	0 0 6½	. . .
Dry Mahogany—Honduras, Tabasco, per ft. sup. as inch	0 0 9	0 0 10
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	17 0 0	21 0 0
American Whitewood Planks— Per ft. cube	0 4 0	. . .

Prepared Flooring—	Per square.	
1 in. by 7 in. yellow, planed and shot.....	0 13 6	0 17 6
1 in. by 7 in. yellow, planed and matched.....	0 14 0	0 18 0
1¼ in. by 7 in. yellow, planed and matched.....	0 16 0	1 1 6
1 in. by 7 in. white, planed and shot.....	0 11 6	0 13 6
1 in. by 7 in. white, planed and matched.....	0 12 0	0 14 0
1¼ in. by 7 in. white, planed and matched.....	0 14 6	0 16 6
¾ in. by 7 inch yellow matched and beaded or V-jointed boards	0 11 0	0 13 6
1 in. by 7 in. do. do. do.	0 14 0	0 18 0
¾ in. by 7 in. white do. do.	0 10 0	0 11 6
1 in. by 7 in. do. do. do.	0 11 6	0 13 6

6-in. at 6d. to 9d. per square less than 7-in.

JOISTS, GIRDERS, &c.

	In London, or delivered. £ s. d.	Railway Vans, per ton. £ s. d.
Rolled Steel Joists, ordinary sections	6 5 0	7 5 0
Compound Girders " "	8 2 6	9 5 0
Angles, Tees and Channels, ordinary sections	7 17 6	8 17 6
Flitch Plates	8 5 0	8 15 0
Cast Iron Columns and Stanchions, including ordinary patterns	7 2 6	8 5 6

METALS.

	Per ton, In London. £ s. d.	£ s. d.
IRON—		
Common Bars.....	7 10 0	8 0 0
Staffordshire Crown Bars, good merchant quality	8 0 0	8 10 0
Staffordshire "Marked Bars" ..	10 10 0	. . .
Mild Steel Bars	8 15 0	9 5 0
Hoop Iron, basis price.....	9 0 0	9 5 0
" " galvanised.....	16 0 0	. . .

(* And upwards, according to size and gauge.)

Sheet Iron, Black.— Ordinary sizes to 20 g.	9 15 0	. . .
" " to 24 g.	10 15 0	. . .
" " to 26 g.	12 5 0	. . .
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.....	12 15 0	. . .
" " 22 g. and 24 g.	13 5 0	. . .
" " 26 g.....	14 5 0	. . .

PRICES CURRENT (*Continued*).

METALS.

	Per ton, in London. £ s. d.	£ s. d.
Sheet Iron, Galvanised, flat, best quality :—		
Ordinary sizes to 20 g.	16 0 0	. . .
,, ,, 22 g. and 24 g.	16 10 0	. . .
,, ,, 26 g.	18 0 0	. . .
Galvanised Corrugated Sheets :—		
Ordinary sizes, 6 ft. to 8 ft. 20 g.	12 15 0	. . .
,, ,, 22 g. and 24 g.	13 5 0	. . .
,, ,, 26 g.	14 0 0	. . .
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11 15 0	. . .
,, ,, 22 g. and 24 g.	12 15 0	. . .
,, ,, 26 g.	14 0 0	. . .
Cut nails, 3 in. to 6 in. (Under 3 in. usual trade extras.)	9 5 0	9 15 0

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3 lbs. & up.	14 5 0	. . .
Pipe in coils	14 15 0	. . .
Soil pipe	17 5 0	. . .
Compo Pipe	17 5 0	. . .
ZINC—Sheet—		
Vieille Montagne ton	27 5 0	. . .
Silesian	27 0 0	. . .
COPPER—		
Strong Sheet per lb.	0 0 10½	. . .
Thin ,,	0 0 11½	. . .
Copper nails ,,	0 0 11	. . .
BRASS—		
Strong Sheet ,,	0 0 10	. . .
Thin ,, ,,	0 0 11	. . .
TIN—English Ingots ,,	0 1 5	. . .
SOLDER—Plumbers' ,,	0 0 6	. . .
Tinmen's ,,	0 0 5	. . .
Blowpipe ,,	0 0 9	. . .

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d. per ft. delivered.
,, fourths	1¾d. ,, ,,
21 oz. thirds	3¼d. ,, ,,
,, fourths	2½d. ,, ,,
26 oz. thirds	4d. ,, ,,
,, fourths	3¼d. ,, ,,
32 oz. thirds	5d. ,, ,,
,, fourths	4¼d. ,, ,,
Fluted sheet, 15 oz.	3d. ,, ,,
,, 21 oz.	4d. ,, ,,
½ Hartley's Rolled Plate	1¾d. ,, ,,
¼ ,, ,, ,,	2d. ,, ,,
⅛ ,, ,, ,,	2½d. ,, ,,

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes or barrels	per gallon	0 2 0
,, ,, ,, in drums	,,	0 2 4
Boiled ,, ,, in pipes or barrels	,,	0 2 3
,, ,, ,, in drums	,,	0 2 7
Turpentine, in barrels	,,	0 3 6
,, in drums	,,	0 3 8
Genuine Ground English White Lead	per ton	20 10 0
Red Lead, Dry	,,	20 0 0
Best Linseed Oil Putty	per cwt.	0 2 0
Stockholm Tar	per barrel	1 10 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for Seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 6
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 12 0

TO CORRESPONDENTS.

T. M. (Below our limit.)

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications *(beyond mere news items)* which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted*

ABINGER (Surrey).—For additions and alterations to the Scarlett Arms, Abinger, for Lord Abinger's Trustees. Mr. C. H. Burstow, architect, 6, West-street, Horsham, Sussex :—

J. Harrison	£393 0	Warren & Killick	£368 0
E. & J. H. Holden	378 0	Reeves & Port,	
J. Knight	370 0	Rudgwick*	362 10

BRANKSOME.—For new cemetery for the Urban District Council. Mr. S. J. Newman, Surveyor to the Council, Branksome, Parkstone :—

	Front Fence, Entrance-gates, &c.	House, Office, Conveniences, &c.
Baker & Pearcey	£782 3 3	£695 0
Hoare & Sons, Bournemouth	796 9 3	633 10*
Jones & Son	718 0 0	700 0
Jones & Seward	729 0 0	665 0
Bayley & Sons, Bournemouth	678 0 0*	—

BRISTOL.—For the erection of a new hotel at Knowle, Bristol, for Messrs. J. & J. Usher, Ltd., New City Brewery, Bristol. Mr. Thos. Scammell, architect and surveyor, 1, St. Stephen-street, Bristol :—

W. Church	£2,993	Perkins & Son	£2,550
Eastabrook & Sons	2,934	C. A. Hayes	2,550
Denby & Co.	2,799	F. Chown	2,500
E. Clark	2,795	T. R. Lewis	2,500
E. Love	2,585	Wilkins & Gosling*	2,475

[All of Bristol.]

CAMBRIDGE.—For rebuilding premises Nos. 28, 29, and 30, Burleigh-street for Messrs. E. Bland & Co. Mr. Paul Bausor, architect 9, St. Andrew's-street, Cambridge. Quantities by the architect :—

The Oak Building Co., Ltd.	£1,570	Prime & Sons, Cambridge*	1,401
Kerridge & Shaw	1 560		

[All of Cambridge.]

HORLEY (Surrey).—For additions to Timberham, for Mr. F. E. Charles. Messrs. Thomas Dinwiddy & Sons, architects, Greenwich, and 54, Parliament-street, S.W. :—

Nightingale & Sons	£1,015	T. Wickens, Charlwood*	£870
Bushby & Son	949		

ITCHINGFIELD (Horsham).—For the erection of a billiard-room and other additions and alterations to the Warren, Itchingfield, for Mr. F. Hulme King. Mr. C. H. Burstow, architect, 6, West-street, Horsham :—

Reeves & Port	£765 0	William Potter	£640 17
G. Potter	725 0	Rowland Bros.	633 0
Dewdney Bros.	680 0	James Wadey, Five Oaks, Billingshurst*	460 0
Hillman & Murrell	660 0		

LONDON.—For the erection of a clerk of works' office on the Norbury Estate, Croydon, for the L.C.C. :—

Roberts & Co.* £143 10

LONDON.—For the provision of cleft oak pale fencing along a portion of the southern boundary of the Totterdown Fields Estate, for the L.C.C. :—

Rowland Bros.* £201 10

LONDON.—For Ingram House, Stockwell-road, S.W., for the Ingram Houses Co., Ltd. Mr. Arthur T. Bolton, architect, 2, The Sanctuary, S.W. Quantities prepared by Messrs. Widnill & Trollope, surveyors, Broad Sanctuary-chambers, Great Tothill-street, S.W. :—

Foster & Dickson	£47,777	Shillitoe	£43,000
Trollope & Sons	43,950	Higgs & Hill	42,354
Holloway Bros.	43,731	Rudd & Sons‡	40,500

‡ Accepted on a reduced scheme.

LONDON.—For alterations and additions to the Northern Hospital, for the Metropolitan Asylums Board :—

Foster Bros.	£2,017	Wall & Co.	£1,835
W. D. Tucker	1,974	Voller & Goodfellow*	1,757
Arthur Porter	1,867		

[Surveyor's estimate, £1,300.]

LONDON.—For re-forming pipe trenches and repairing corridor floors at the South Western Hospital, for the Metropolitan Asylums Board :—

H. & C. Davis	£935 0 0
J. C. Mason	675 12 6
Hall & Sons	661 9 0
Coleman & Co., Brixton*	602 15 0

[Engineer's estimate, £612.]

LONDON.—Accepted for the supply of the following materials to the Metropolitan Asylums Board on schedule of prices for twelve months :—

Builders', Engineers', and Smiths' Ironmongers.

	Items.		Items.
Jukes, Coulson, Stokes, & Co.	89	Mosers, Ltd.	9
Pryke & Palmer	60	Easterbrook, Allcard, & Co.	3
O'Brien, Thomas, & Co.	12	Hobdell, Way, & Co.	1
Franklin & Son	10	Carlton Iron Foundry Co.	1
Buck & Hickman	9		

Plumbers' and Gasfitters' Ironmongers.

	Items.		Items.
Pryke & Palmer	82	Buck & Hickman	15
Mosers, Ltd.	34	Hayward, Tyler, & Co.	5
Harris & Dawson	16		

Electrical Accessories.

	Items.		Items.
General Electric Co.	24	Edison & Swan United Electric Light Co.	3
Baxter & Caunter	18	The Johnson & Phillips' Electric Cable Works	2
Pryke & Palmer	15	Siemens' Electrical Appliances	1
Sun Electric Co.	5		
Siemens, Bros., & Co., Ltd.	4		
Goossens, Pope, & Co.	3		

PENGAM (Wales).—For the erection of sixteen houses for the Building Club. Mr. P. Vivian Jones, architect, Hengoed, viâ Cardiff :—

E. Hughes, Capel-street, Bargoed, viâ Cardiff, £162 per house.

ST. ALBANS.—For additions to workhouse infirmary, for the Guardians. Mr. H. E. Hansell, architect, Station Buildings, St. Albans. Quantities by Mr. J. G. Herbertson, St. Albans :—

Vail & Williamson	£3,677 0	F. W. Stanley	£3,594
C. W. Dumpleton	3,676 0	Miskin & Sons*	3,517
G. Dunham	3,640 0	J. T. Bushell	3499

[All of St. Albans.]

SUPPLY of Certain Classes of TIMBER for use in M.T. Centres, on Running Contracts, for the School Board for London :—

Description of Timber.		John Stewart.	R. Garrard & Co.	The London School Furniture Co.	Hahn & Co.	Cobbetts, Ltd.*	Ingram, Perkins, & Co.*	Wm. Mallinson & Co.	J. Latham, Ltd.
		d.	d.	d.	d.	d.	d.	d.	d.
2½ in. by 1½ in. yellow deal	per ft. run	⅝	1½	1	—	1	¾	2½	1
1½ in. by 9 in.	,,	3½	3⅜	3½	—	2½	3	7	4
¾ in. by 9 in.	,,	2½	2½	⅞	—	2	1½	5	2½
¾ in. by 11 in. yellow pine	,,	4	3½	4	—	2½	3½	4	4
¾ in. teak	per ft. super	5	4	4½	4½	4	3½	5	3½
¼ in. ,,	,,	4½	3	3½	3½	3	2½	4	2½
¼ in. oak	,,	3	2½	2	2½	1½	2	2½	2½
¼ in. ,,	,,	2½	1½	1½	2	1½	1½	2	1½
¼ in. mahogany	,,	4½	3½	3	4½	2½	3½	5	3½
¼ in. ,,	,,	4	2½	2½	3	1½	2½	3½	2½
1 in. satin walnut	,,	4	4	3	4½	3	2½	4	2½
¾ in. ,,	,,	3½	3	2½	4	2½	2½	3½	2½
½ in. ,,	,,	2½	2½	2½	3½	2½	1½	3	2½
½ in. ,,	,,	2½	2½	2½	3	1½	1½	2½	2
¾ in. American walnut	,,	7½	7	8	8½	6½	5½	7½	6
½ in. ,,	,,	6½	5	5	5½	4½	4½	6	4½
¼ in. ,,	,,	5	4½	4½	5	3½	3½	5	3½
¼ in. ,,	,,	4	3½	3	4	2½	2½	3½	2½
¼ in. cedar	,,	5½	5	3½	—	4	3	4	3½
¼ in. ,,	,,	5½	3½	2½	—	3	2½	3	2½
¾ in. basswood	,,	3	3	2½	3	2½	2½	3	2½
¼ in. ,,	,,	2½	2½	2½	2½	1½	1½	2½	2½

[*See also Page 89.*

COMPETITIONS, CONTRACTS AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered
Machinery for Lifting Boats	Austrian Government	100,000 Kronen, 75,000 Kronen, and 50,000 Kronen	Mar. 3, 1904
*School for Boys	Governors of Acton Co. School	2nd and 3rd, 30*l.* and 20*l.* respectively	No date.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c., supplied by	Tenders to be delivered
*Reconstruction of Sewers	Corporation of London	Engineers' Office, Public Health Department, Guildhall, E.C.	July 21
Paving Setts, &c.	Wallasey U.D.C.	W. H. Travers, Engineer, Public Offices, Egremont, Cheshire	do.
Flooring and Roof Works at Schools, Bowerham	Lancaster School Board	T. Cann Hughes, Town Hall, Lancaster	do.
Additions to Schools, Manningtree, Essex	The Wesleyans	J. W. Start, Surveyor, Cups Chambers, Colchester	do.
Sewerage Works, &c., Burgh-by-Sands	Carlisle R.D.C.	Surveyor, 14, Bank-street, Carlisle	do.
Boundary Wall at Hospital, Ystrad	Rhondda U.D.C.	W. J. Jones, Engineer, Council Offices, Pentre, Glam.	do.
Warehouse, Church-street	Trowbridge Industrial Society, Ltd.	W. W. Snallum, Architect, Church-street, Trowbridge	do
Farm Buildings	Haslingden Guardians	J. K. Hay, Union Offices, Pikelaw, near Rawtenstall	do.
Boundary Wall, Coombe Top	Thornhill U.D.C.	J. H. Dyson, Council Offices, Thornhill	do
Road Works, Clydach Vale	Cambrian Collieries Company, Ltd.	L. W. Llewellyn, Clydach Vale	do.
Timber Yard, Regent-street, Bootle	L. & Y. Railway Company	R. C. Irwin, Hunt's Bank, Manchester	do.
Two Bridges, Byfleet, Surrey	Chertsey R.D.C.	W. Durrant, Spinney Hill, Addlestone	do.
Additions to Bank Premises, High Cross-st., St. Austell	Capital & Counties Banking Co., Ltd	F. C. Jury, 1, Alma-villas, St. Austell	do.
Villa, Stairfoot	.....	E. W. Dyson, Civil Engineer, 14, Market-hill, Barnsley	do.
Eight Cottages, Whickham	.....	Hannington & Co., Ltd., Guildhall Chambers, Newcastle	July 22
Post Office Buildings, Pavement, Todmorden	.....	J. Horsfall, Architect, Todmorden	do.
Bridge Works, Kirby Sigston	Northallerton R.D.C.	W. Fowle, Council Offices, Northallerton	do.
Well Sinking, &c., Rathmichael	Rathdown R.D.C.	R. M. Butler, Civil Engineer, 12, Dawson-street, Dublin	do.
Water Supply Works, Whippingham	Isle of Wight R.D.C.	H. E. Stratton, Pyle-street, Newport, Isle of Wight	do.
Thirty-five Cottages, Blaengarw (Wales)	Queen-street Building Society	J. M. Williams, Architect, Blackmill	do.
Sewers, &c.	Newnham U.D.C.	W. F. Jones, Architect, 21, George-street, Gloucester	do.
Station Buildings, Church Fenton, near Leeds	N. E. R. Co.	W. E. Bell, Architect, N. E. R. Co's. Offices, York	do.
Shelter, Roseburn Park	Edinburgh Town Council	R. Morham, Architect, City Chambers, Edinburgh	do.
Works at Church, James-street, Neath	The Deacons	P. Thomas, Gnoll Park-road, Neath	do.
House and Shop, Beamish	Mr. J. Tait	T. E. Crossling, Architect, Front-street, Stanley, Durham	do.
Schools, Whitehaven	Hogarth Mission Committee	J. S. Moffat, Architect, Whitehaven	do.
Additions to Workhouse	Lichfield (Staffs) Guardians	D. C. Marks, Architect, St. Mary's Chambers, Lichfield	do.
Kerb Setts	Ramsgate Town Council	T. G. Taylor, Engineer, Albion House, Ramsgate	do.
Store Premises, Linthwaite	Slaithwaite Indus. Society, Ltd.	J. Berry, Architect, 3, Market-place, Huddersfield	do.
*Sewerage Works	City of Westminster	Work's Department, Westminster City Hall, Charing Cross-rd., W.C.	do.
*Painting and Decorating Town Hall, &c.	Metropolitan Borough of Chelsea	Borough Surveyor, Town Hall, Chelsea, S.W.	do.
*Decorative Repairs at Union Offices	Southwark Union	G. D. Stevenson, Architect, 13 and 14, King-street, Cheapside, E.C.	July 23
*Decorative Repairs at Infirmary, E. Dulwich	do.	do.	do.
Additions to the Greyhound Inn, Bargoed, Mon.	.....	D. F. Pritchard, Crumlin, Mon	do.
Chapel, Grove-place, Port Talbot	.....	Mr. Rees, Glynderwen, Grove-place, Port Talbot	do.
*Furnishing Hargher Clough Schools	.....	A. J. Shaw, A.R.I.B.A., & T. H. Vowles, Mercantile Chmbs., Burnley	do.
Sewage Disposal Works	Trowbridge U.D.C.	W. H. Stanley, Civil Engineer, Trowbridge	do.
Two Houses, Westcliffe, Southend-on-Sea	Essex County Council	F. Whitmore, Architect, Duke-street, Chelmsford	do.
Paving Works, &c., Newton-road	Tunbridge Wells Town Council	W. H. Maxwell, Civil Engineer, Town Hall, Tunbridge Wells	do.
Cast Iron Pipes (1,300 tons)	Manchester Corporation	C. Nickson, Town Hall, Manchester	do.
Sinking Well, near the Hall Farm	Aldeburgh (Suffolk) Corporation	J. C. Gordon, Surveyor, Aldeburgh	do.
House, Moresby, near Whitehaven	Mr. Peter Gunn	J. S. Stout, Architect, 36, Lowther-street, Whitehaven	do.
School	Currie (N.B.) School Board	W. Baillie, Architect, 223, Hope-street, Glasgow	do.
*Buildings for Electric Lighting Works	Heston and Isleworth U.D.C.	Town Hall, Hounslow	do.
*New Coast Guard Station, near Faversham	*The Admiralty	Director of Works Department, Admiralty, W.C.	July 24
Stabling, &c., Rhymney	.....	T. Roderick, Architect, Merthyr Tydfil	do.
Storm Water Drain, &c., Pershore	Worcestershire County Council	J. H. Garrett, Surveyor, Shirehall, Worcester	do.
Rebuilding Jabez Chapel, Duffryn Gwaun	.....	G. Morgan & Sons, Architects, Carmarthen	July 25
Banking Premises, Rothie-Norman, N.B.	.....	R. G. Wilson, Architect, 181a, Union-street, Aberdeen	do.
Sewerage Works, &c.	Bacup Corporation	W. H. Elce, Civil Engineer, Bacup	do.
Chapel, &c., Hafod	The Wesleyan Trustees	A. O. Evan, Architect, Pontypridd	do.
Twenty Houses, Waunllwyd, Mon	The Building Club	R. L. Roberts, Architect, Abercarn	do.
Road Works, Old Road	Frinton-on-Sea (Essex) U.D.C.	T. W. Golds, Surveyor, High-street, Thorpe-le-Soken	July 27
Cast Iron Pipes, &c.	Walton-on-Thames U.D.C.	W. H. Radford, Civil Engineer, King-street, Nottingham	do.
Steel Tram Rails (350 tons)	Cheadle U.D.C.	C. R. Brady, Civil Engineer, 13, Warren-street, Stockport	do.
Twenty-eight Houses, Tirphil	Craig Rhymney Building Club	T. Roderick, Architect, Merthyr Tydfil	do.
Schools	West Hartlepool School Board	R. Holt, Architect, School Board Offices, West Hartlepool	do.
Sewerage Works, Cottimore-lane	Walton-on-Thames U.D.C.	W. H. Radford, Civil Engineer, King-street, Nottingham	do.
Asphalt Works	Lanchester Parish Council	H. Knowles, Council Offices, Burnhope	do.
Breakwater	Aberystwyth Corporation	A. T. Walmisley, Engineer, 9, Victoria-street, S.W.	do.
Ninety-one Houses, Rhymney	Twyn Carno Building Club	T. Roderick, Architect, Merthyr Tydfil	do.
Public Library, Market-road	Chelmsford Town Council	Chancellor & Son, Architects, Chelmsford	do.
*Timber Breakwater Harbour Entrance	Aberystwyth Corporation	A. T. Warimsley, 9, Victoria-street, Westminster, S.W.	do.
*Granite, Gravel, and Hoggin	Barnet U.D.C.	Not supplied	July 29
*7 ft. Disinfector, Cook-road, Wanstead Flats, E.	Wanstead U.D.C.	Not stated	do.
*Steam Roller with Attendant, &c.	do.	Surveyor, Council Offices, Wanstead, E.	do.
Sewerage Works, Edenbridge	Sevenoaks R.D.C.	C. E. Bruges, Civil Engineer, 1, Victoria-street, Westminster	do.
Alterations to Town Hall	Devizes Corporation	Borough Surveyor, 15, Market-place, Devizes	July 30
Seventy-two Houses, Aberaman	Pleasant View Building Club	T. Roderick, Architect, Clifton-street, Aberdare	do.
*New Coast Guard Buildings at Hayling Island	The Admiralty	Works Department, Admiralty, 21, Northumberland-avenue, W.C.	July 31
Cast Iron Pipes (1,200 tons)	Glasgow Corporation	J. R. Sutherland, Engineer, 45, John-street, Glasgow	Aug. 1
*Builder's Works at Foleshill Works	Coventry Corporation Gas Commit.	Engineer and General Manager, Gas Works, Coventry	do.
Cattle Ring at Market	Shrewsbury Corporation	W. C. Eddowes, Borough Surveyor, The Square, Shrewsbury	Aug. 3
*School in Grovelands-road, Reading	The Reading Education Committee	C. Smith & Sons, Architects, Friar-street, Reading	Aug. 4
*Band Stand, Conveniences, &c., Limehouse	London County Council	General Constn. Section, Architect's Department, 18, Pall Mall, S.W.	do.
Sewers, &c.	Hale (Cheshire) U.D.C.	F. J. Lobley, Civil Engineer, Hale, Cheshire	do.
Sewerage Works, Talgarth, Herefordshire	Hay R.D.C.	R. E. W. Berrington, Civil Engineer, Bank Bldngs., Wolverhampton	do
*Painting, &c., Chapel in St. Leonards-street Workhouse	Stepney Union	Master of the Workhouse, St. Leonards-street, Bromley-by-Bow, E.	Aug. 6
*Roadmaking	Couchmore Estate Thames Ditton	C. & F. Rutley, 11, Dowgate Hill, E.C.	do.
*New Lighthouse Dwellings at Portland Bill, Dorset	Trinity House Corporation	The Trinity House, London, E.C.	do.
*New Coastguard Buildings at Comaes	The Admiralty	Works Department, Admiralty, 21, Northumberland-avenue	Aug. 7
*Sewerage Works, &c., Muswell Hill, &c.	Hornsey U.D.C.	Engineer to the Council, Council Offices, Southwood-lane, Highgate	Aug. 10
Chapel, Kidwelly, Wales	The Trustees	J. Anthony & Sons, Anchor House, Kidwelly	Aug. 15
*New Public Offices, Fire Station, &c.	Maldens and Coombe U.D.C.	William Hope, Seymour-road, Hampton Wick	Aug. 31
Factory Buildings, Long Eaton	.....	E. R. Ridgeway, Architect, Long Eaton	No date.
Three Houses, Glebe Estate, Hunstanton	.....	G. Fitt & Co., Ltd., Architects, Norwich	do.
House, Norman-road, Stalybridge	.....	T. George & Son, Architects, Old Square, Ashton-under-Lyne	do.
Five Cottages, Steer Point, near Plymouth	.....	Corderoy & Co., 12, George-street, Plymouth	do.
Works at Schools, Hastings-road	Swadlincote School Board	C. F. Underhill, Architect, Glencoy, Swadlincote	do.
Club Premises, Mickley, Northumberland	District Club Co., Ltd.	W. Dixon & Sons, Architects, St. John-street, Newcastle	do.
House, Perry Green, Much Hadham, Herts	Mrs. D. M. Crane	Ansell & Ansell, Architects, 14, St. Dunstan's Hill, E.C.	do.
Boundary Wall at Cemetery, Westgate-road, Newcastle	The Burial Board	Liddle & Browne, Architects, Newcastle	do.
Laboratory at School, near Oldham	.....	C. T. Taylor, Architect, 10, Clegg-street, Oldham	do.
Two Houses, Parcmain, Building Estate, Carmarthen	.....	A. Soppitt, Carmarthen	do.
Free Library	Dalton-in-Furness U.D.C.	W. Richardson, Surveyor, Dalton-in-Furness	do.
Offices, Great Wilson-street, Leeds	Middleton Colliery Co. Ltd.	E. Hill, Architect, 13, Oxford-row, Leeds	do.

[*See also next page.*

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Inspector of Nuisances	Chepstow U.D.C.	Council Offices, Chepstow	July 25
*Surveyor	do.	do.	do.
*Assistant Lecturer	Borough Polytechnic Institute	105*l.* per annum	July 27
*Surveyor of School Buildings	Middlesex Education Committee	300*l.* per annum	do.

Those marked with an asterisk (*) are advertised in this Number. *Competitions*, iv. *Contracts*, iv. vi. viii. x. & xxi. *Public Appointments*, xviii.

TENDERS (*Continued*).

SUPPLY of the FOLLOWING ARTICLES, on Running Contracts, for the London School Board :—

——	Cupboards. No. 1. each.	Cupboards. No. 4. each.	Cupboards. Map and Rack. each.	Cupboards. Stock and Map. each.	Cupboards. Large Science. each.	Cupboards. Modelling. each.	Abacus Frames. With Stands. each.	Abacus Frames. Without Stands. each.	Towel Rollers. each.	Rollers each.	Tables. 4 ft. 6 in. by 3 ft. each.	Tables. Small Kindergarten. per doz.	Tables. Pedestal each.	Platforms. each.	Tables. Laundry. per doz.	Tables. Trestle Tops. each.	Trestles each.
H. Bouneau	£ s. d. 8 0 0	£ s. d. 2 2 6	£ s. d. 7 17 6	£ s. d. 6 6 0	£ s. d. 11 17 6	£ s. d. 18 0 0	£ s. d. 0 12 3	£ s. d. 0 7 2	s. d. 2 4	s. d. 0 5	£ s. d. *2 2 0	£ s. d. *6 12 0	£ s. d. 6 16 6	£ s. d. 1 0 0	£ s. d. 13 19 0	£ s. d. 0 18 0	s. d. *6 0
Brake & Co.	—	—	10 7 0	7 17 0	—	—	1 1 6	0 16 6	3 9	1 2	—	—	—	—	—	—	—
J. Cox	—	—	*6 10 6	*3 17 6	—	—	0 13 6	0 9 3	*1 6	*0 6	—	—	—	—	—	—	—
T. Cruwys	8 5 0	2 3 0	9 0 0	6 15 0	11 0 0	18 0 0	—	—	—	—	—	—	—	—	—	—	—
A. Duncan	*6 15 9	*2 2 0	—	—	—	—	—	—	—	—	3 3 0	7 4 0	8 0 0	*0 19 7	*13 16 0	*0 10 3	7 6
Educational Furnishing Co., Ltd.	—	—	—	—	*7 0 0	16 0 0	—	—	—	—	—	—	—	—	—	—	—
Galbraith Bros.	—	—	7 7 0	4 12 0	—	—	2 2 0	1 10 0	3 6	2 6	—	—	—	—	—	—	—
Garvie & Sons	—	—	11 8 3	7 6 3	—	—	—	—	—	—	—	—	—	—	—	—	—
General Builders, Ltd.	10 10 0	3 15 0	—	—	14 10 0	25 7 6	—	—	—	—	—	—	—	—	—	—	—
Gloucester Joinery Co., Ltd.	—	—	10 15 0	7 15 0	—	—	—	—	—	—	—	—	—	—	—	—	—
Golding & Ansell	—	—	—	—	17 0 0	19 10 0	—	—	3 6	1 0	—	—	—	—	—	—	—
Goodall, Lamb, & Heighway, Ltd.	9 0 0	2 12 6	—	—	—	—	1 18 0	1 15 0	2 6	0 9	2 11 3	9 19 0	7 7 4	1 18 0	15 0 0	0 10 7	6 7
Hammer & Co., Ltd.	8 15 0	2 14 0	9 5 0	6 8 0	—	—	0 13 0	*0 7 0	4 0	2 0	2 10 0	7 4 0	7 7 0	1 3 0	15 6 0	0 15 0	6 9
Harrod's, Ltd.	—	—	11 10 0	7 10 0	—	—	—	—	3 9	1 2	—	—	—	—	—	—	—
London School Furniture Co.	8 10 0	2 3 3	7 14 0	6 5 0	—	—	*0 11 6	0 7 4	2 6	0 9	—	—	—	—	—	—	—
Marchant & Hirst	9 0 0	3 0 0	—	—	—	—	—	—	—	—	2 7 0	13 4 0	6 5 0	1 8 0	17 8 0	1 4 6	7 6
North of England School Furnishing Co., Ltd.	—	—	9 13 0	5 15 6	—	—	—	—	—	—	—	—	—	—	—	—	—
Parkstone Steam Joinery Co.	—	—	—	—	13 0 0	18 0 0	—	—	3 3	0 9	—	—	—	—	—	—	—
T. R. Roberts, Ltd.	—	—	20 0 0	12 8 8	—	—	3 15 0	2 3 5	8 1½	3 9½	—	—	—	—	—	—	—
Shoolbred & Co.	14 14 0	3 12 6	—	—	—	—	—	—	—	—	4 0 0	12 18 0	11 18 0	1 16 6	22 10 0	0 15 0	12 6
R. Smith	—	—	—	—	11 10 0	*13 13 0	—	—	—	—	—	—	—	—	—	—	—
Spence & Sons	9 11 0	2 17 0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Spencer & Co.	17 0 0	3 15 6	—	—	17 10 0	24 0 0	—	—	—	—	—	—	—	—	—	—	—
Wallis & Co., Ltd.	—	—	—	—	14 10 0	16 16 0	—	—	—	—	3 2 0	9 9 0	*5 19 6	1 13 3	14 14 0	0 16 6	7 9
Waring & Sons, Ltd.	—	—	—	—	—	—	—	—	—	—	2 6 6	13 4 0	6 6 6	1 7 6	15 18 0	1 4 6	6 6

SUPPLY of GYMNASTIC APPARATUS, on Running Contracts, for the School Board for London :—

Articles.	F. H. Ayres.	Geo. Spencer.*	T. Cruwys.*	Gamage, Ltd.	Goff & Co.	‡ Adolf A. Stempel.
SECTION A.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Adjustable parallel bars ..... each	5 0 0	4 12 0	4 10 0	5 17 6	8 0 0	6 0 0
Do. fitted with steel core ,,	5 11 0	5 5 0	5 0 0	6 13 6	8 15 0	8 0 0
Fixed parallel bars ..... ,,	2 18 0	2 2 0	2 5 0	3 3 0	4 0 0	3 10 0
Do. fitted with steel core ,,	3 9 0	2 16 6	2 15 0	3 18 6	4 15 0	5 10 0
Adjustable "iron" horizontal bar ..... ,,	3 0 0	3 3 0	4 0 0	4 7 6	5 15 0	5 10 0
Do. do. with indiarubber ¾ in. thick, properly fixed to pedestals ..... ,,	3 10 0	3 10 0	4 3 0	4 18 9	6 2 6	—
Adjustable vaulting horse ..... ,,	8 8 0	6 0 0	5 19 0	7 15 9	10 15 0	10 10 0
Fixed vaulting horse ..... ,,	7 0 0	4 10 0	4 10 0	6 6 0	7 0 0	8 15 0
Spring board ..... ,,	0 17 6	1 0 0	1 0 0	1 3 9	4 18 0	1 7 6
Do. fitted with indiarubber at ends ,,	1 5 6	1 8 0	1 5 0	1 14 6	5 10 0	1 10 6
Climbing rope ..... per foot run	0 1 3	0 1 1	0 1 1	0 1 4	0 1 6	0 2 6
Flying rings ..... ,,	0 1 2	0 1 6	0 0 11	0 2 3	0 3 2	0 12 6 (each)
Knotted rope ..... ,,	0 1 6	0 1 0	0 1 4	0 1 7	0 1 6	0 2 6
Plugged rope ..... ,,	0 1 7	0 0 9	0 1 4	0 1 6	0 4 3	0 3 0
Sparred rope ..... ,,	0 1 8	0 0 9	0 1 6	0 1 6	0 2 9	0 3 0
Rope ladder ..... ,,	0 1 8	0 1 6	0 1 9	0 1 11½	0 2 3	0 2 6
Stirrups ..... ,,	0 1 2	0 1 6	0 0 11	0 2 3	0 8 6 (pair)	0 12 6 (each)
Trapeze ..... each	1 6 0	0 7 6	0 17 0	0 2 3	0 15 0	1 11 6
Jumping stands ..... ,,	0 14 6	0 12 6	1 0 0	0 15 9	1 12 0	1 17 6 (pair)
Mat ..... per foot square	0 1 3	0 0 11	0 0 11½	0 0 11½	0 1 4	0 1 4
Mattress ..... ,,	0 1 3	0 0 10½	0 0 10	0 0 11	0 1 6	0 1 9
Punching ball, fixed complete	1 5 0	0 17 6	0 13 0	0 17 6	1 15 0	0 18 0
SECTION B.						
Rib stoll (fixed and finished) .. at per foot run	0 7 6	0 7 9	0 9 11	0 11 3	1 3 6	0 8 6
Double portable boom, including standards, sliding seats, &c., fixed in position ..... ,,	0 10 0	0 3 6	0 5 6	0 19 6	9 9 0 (each)	0 8 3
Low forms, fixed in position .. ,,	0 2 1	0 2 0	0 1 11	0 2 9	1 10 0 (each)	0 2 2
Portable horizontal ladder, with necessary fittings, fixed in position ..... ,,	0 8 0	0 3 0	0 5 9	0 3 4	0 7 6	0 9 6
Rails for dumb and bar-bells .. ,,	0 1 5	0 0 10	0 1 0	0 1 0	0 1 3 (each)	0 1 2½

‡ This contractor quotes for apparatus of his own design and pattern, and not in accordance with the Board's ecification. His prices do not include fixing.

SHIREHAMPTON.—For new Parish Hall for the Parish Council, Shirehampton, Bristol. Mr. F. Bligh Bond, architect, Star Life Building, St. Augustines, Bristol. Quantities supplied :—

	A. With slates.	B. With tiles.
W. H. Roe	£3,316 0 0	£3,315 0 0
Heard & Son	2,951 0 0	2,935 0 0
Perkins & Sons	2,910 0 0	2,900 0 0
J. Chapman	2,915 10 6	2,881 12 7
Cowlin & Sons	2,883 0 0	2,873 0 0
T. R. Lewis	2,860 0 0	2,843 0 0
E. Love	2,803 0 0	2,772 16 0
J. Flower	2,770 0 0	2,738 0 0
C. A. Hayes*	2,715 0 0	2,687 0 0

SLINFOLD (Sussex).—For alterations and additions to business premises for a new post-office at Slinfold, for the trustees of the late Mr. Charles Child. Mr. C. H. Burstow, architect, 6, West-street, Horsham :—

G. Marden	£474	Hillman & Murrell	£450
James Wadey	465	Reeves & Port	441
Rowland Bros.	459	T. Ayling, Slinfold*	353

TAMWORTH.—For the erection of stabling, &c, the Leys, and 1, Colehill, for the Committee, Tamworth Industrial Co-operative Society, Ltd. Mr. J. W. Godderidge, architect, 4, Bolebridge-street, Tamworth :—

Stabling, &c.

Clarson & Son	£2,100 0	Watton & Sons, Tamworth*	£1,999 15
B. Musson	2,066 0	E. Williams	1,870 0

Offices, Colehill.

E. Williams	£563	Clarson & Son, Tamworth*	£954

WYMONDHAM.—For alterations and additions to Wicklewood workhouse, Wymondham, for the Foreboe Union. Mr. J. Owen Bond, architect, 15, Upper Kingstreet, Norwich :—

Chapman & Son	£2,795 0	Young & Son	£2,347 0
Scarles Bros.	2,713 0	Gill	2,334 0
Taylor	2,654 0	Semmence	2,331 0
Holmes & Son	2,638 0	Greengrass	2,321 0
Skipper & Bartram	2,588 10	Hawes	2,303 0
Bowden	2,583 0	Blyth	2,290 0
Smith	2,446 18	Gunton & Palmer, Costressey*	2,187 12
Boddy & Son	2,359 0	Hannent	2,184 14

[*See also next page.*

WISBECH.—For improvements at the Union Workhouse. Mr. F. Burdett Ward, architect, 7, York-row, Wisbech (and Spalding). Quantities by the architect.

—	Section I. Alterations to Old as per Schedule of Prices.	Section II. New Sanitary Annexes. (a) Building.	Section II. New Sanitary Annexes. (b) Plumbing.	Section III. Re-Drainage.	Estimated Total (including Alterations).
F. W. Carrington	—	—	£458 10 0	—	—
E. R. Lankfer	—	—	419 19 0	—	—
R. Dye	13 p. c. above	£1,432 0 0	507 0 0	£251 0 0	£2,650 0 0
J. Guttridge	at par	1,490 17 4	402 18 10	285 16 6	2,579 12 8
R. Shanks	10 p. c. above	1,421 0 0	440 0 0	236 10 0	2,537 10 0
J. S. Johnson	7½ p. c. above	1,275 0 0	515 14 0	305 1 0	2,525 15 0
G. J. West	20 p. c. above	1,343 13 6	424 15 0	273 16 0	2,522 4 6
Elworthy & Co.	2½ p. c. below	1,209 0 0	470 15 0	238 10 0	2,328 5 0
Girling & Co.	6 p. c. below	1,236 0 0	441 4 0	263 0 0	2,316 4 0
J. W. Wilkinson, Elm*	at par	1,150 0 0	459 10 0	208 1 0	2,217 11 0*

For heating apparatus, hot-water services, and ventilating appliances:—
Dawson & Co., Ltd., Stalybridge £480
[Fourteen other firms tendered.]

PUBLISHER'S NOTICES.

THE INDEX (with TITLE-PAGE) for VOLUME LXXXIV. (January to June, 1903) was given as a supplement with the number for July 11.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also

READING CASES (Cloth), with Strings, price 9d. each.

THE EIGHTY-FOURTH VOLUME of "The Builder" (bound), price Twelve Shillings and Sixpence, will be ready on the 22nd inst.

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 3s. 6d. each.

CHARGES FOR ADVERTISEMENTS.

COMPETITIONS, CONTRACTS, ALL NOTICES ISSUED BY CORPORATE BODIES, COUNTY AND OTHER COUNCILS, PROSPECTUSES OF PUBLIC COMPANIES, SALES BY TENDER, LEGAL ANNOUNCEMENTS, &c. &c.

Six lines, or under ..... 6s. 0d.
Each additional line ..... 1s. 0d.

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FOUR lines (about thirty words) or under ..... 2s. 6d.
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PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps must not be sent, but all sums should be remitted by Postal Orders, payable to J. MORGAN, and addressed to the Publisher of "THE BUILDER," Catherine-street, W.C.

Advertisements for the current week's issue are received up to THREE o'clock p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after HALF-PAST ONE p.m. on that day. Those intended for the Outside Wrapper should be in by TWELVE noon on WEDNESDAY.

ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before TEN o'clock on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

PERSONS Advertising in "The Builder" may have *Replies addressed to the Office*, Catherine-street, Covent Garden, W.C. *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage. Unused stamps are returned to advertisers the week after publication.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES, { NINEPENCE EACH. By Post (carefully packed) 1s.

B. NOWELL & CO.
STONE MERCHANTS & CONTRACTORS.
Chief Office.—*Warwick Road, KENSINGTON.*
Norway, Guernsey, and Leicestershire Granite, Kerb, Pitching, and Yorkshire Stone.
ESTIMATES GIVEN FOR EVERY DESCRIPTION OF ROAD MAKING.

WHITBY.—For the erection of a farmhouse, The Grange, for Messrs. Foster. Mr. E. H. Smales, architect, 5, Flowergate, Whitby. Quantities by architect:—

A. Palframan ..£627 16 6 | Robinson Harland, Whitby* £498 10 0
J. Harrison .... 505 15 0 |

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SLATER and TILER.
Penrhyn - Bangor,
Oakeley - Portmadoc,
And every other description of Slates, except American, Ready for immediate delivery to any Railway Station.
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BETHNAL GREEN, LONDON, E.

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SENSITIZED PAPERS, SUN COPIES, &c.
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74-76, GREAT QUEEN STREET, LONDON, W.C.

THE BATH STONE FIRMS, Ltd.
BATH.
FOR ALL THE PROVED KINDS OF
BATH STONE.
FLUATE, for Hardening, Waterproofing, and Preserving Building Materials.

HAM HILL STONE.
DOULTING STONE.
The Ham Hill and Doulting Stone Co.
(incorporating the Ham Hill Stone Co. and C. Trask & Son, The Doulting Stone Co.).
Chief Office:—Norton, Stoke-under-Ham, Somerset.
London Agent:—Mr. E. A. Williams, 16, Craven-street, Strand.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co.

SPRAGUE & CO., Ltd.,
LITHOGRAPHERS,
Employ a large and efficient Staff especially for Bills of Quantities, &c.
4 & 5, East Harding-st., Fetter-lane, E.C.

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